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ABSTRACT

This reference manual is a glossary of words and terms related to conservation, ecology, and land use. The words and terms selected are those most likely to be encountered in textbooks and periodicals not intended for the professional resource manager or specialist. The glossary is intended to be used by Missouri teachers and youth group leaders. (Lists of conservation education consultants and outdoor skills education specialists in Missouri are appended.) (JN)

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Instructor Reference Manual

A GLOSSARY OF SELECTED TERMS OF CONSERVATION, ECOLOGY AND RESOURCE USE

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SPECIAL ACKNOWLEDGEMENT

The Missouri Department of Conservation is especially indebted to the Soil Conservation Society of America for its kind permission to excerpt entries from its *Resource Conservation Glossary* for inclusion in this work.

SE 045 374

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Instructor Reference Manual

Conservation education encompasses all the activities and experiences which result in learning about people's dependency upon and use of natural resources to satisfy their needs and wants. Since 1941, the Missouri Department of Conservation has supported a *formal education* program through Missouri's public and non-public schools.

This publication was developed as a reference source to supplement the Department's expanded conservation education programs.

The production of this manual was a challenge which involved many individuals. We are indebted to Director Larry R. Gale and Assistant Director Allen Brohn for their support and encouragement. We are also indebted to Superintendent of Education Donald K. Heard, and Assistant Superintendent of Conservation Education Al Palladino, for their guidance and assistance. This publication would not be possible were it not for the contributions of Neil W. Jenkins and Charles D. Jordan, conservation education consultants. Thanks to Elaine Callaway, conservation education projects coordinator and to Lisa Watt, production assistant, for their production and editing efforts.

The *Instructor Reference Manual* is dedicated to the Department's conservation education consultants, past and present. This small group of men and women have recognized education as a vital and important force in resource conservation...and have accepted the challenge. The conservation challenge should concern all of us, but especially those charged with shaping today's youth. We hope this series will aid Missouri teachers in meeting this challenge.

For additional information on conservation or outdoor skills education programs, write the Education Section, Missouri Department of Conservation, P.O. Box 180, Jefferson City, MO 65102.

Preface

A glossary is a collection of explanations or interpretations of words or terms of (1) a particular work or author, or (2) a field or subject of learning. This work is neither. It is not associated with a particular publication or author, and conservation education is neither a subject nor field of learning to itself. Conservation education is interdisciplinary in scope. Its language draws upon all subjects and technologies associated with all natural resources—air, water, land, soil, plants, animals, minerals, energy sources, and people.

Each of the above-listed natural resource areas has a specialized terminology with appropriate glossaries. A complete glossary that would include all words and terms from all of these areas would be voluminous! This work is only an attempt to present those (arbitrarily and subjectively) selected words and terms that the selector believes are most likely to be encountered in textbooks and periodicals not intended for the professional resource manager or specialist. As with all such attempts, this work will likely fall far short of its intent, both for "sins of omission" and for "sins of commission." It is hoped, however, that it will at least partially fulfill its purpose of being of value and help to teachers and youth group leaders in Missouri.

The Conservation Education Unit, Missouri Department of Conservation, will welcome comments and suggestions regarding words and terms included or omitted so that any revision of this work might be even more helpful.

A

abatement: The reduction in degree or intensity of pollution.

abiotic: The non-living, basic elements and compounds of the environment.

abortion: A termination of pregnancy before the embryo or fetus becomes viable.

abrasion: The wearing away by friction, the chief agents being currents of water, wind laden with sand or other rock debris, and glaciers.

absorption: The penetration of one substance into or through another.

abyssal zone: The bottom zone of the ocean. Compare *bathyal zone, euphotic zone.*

accelerator: In radiation science, a device that speeds up charged particles such as electrons or protons.

acclimation: The physiological and behavioral adjustments of an organism in response to a change in environment.

acclimatization: The adaptation over several generations of a species to a marked change in the environment.

accretion: The gradual addition of new land to old by the deposition of sediment carried by a stream.

acid: Any substance that yields to its solution or other substances hydrogen ions; a compound that can react with a base to form a salt.

acid precipitation: Atmospheric precipitation that is composed of the hydrolyzed by-products from oxidized halogen, nitrogen, and sulfur substances.

acid rain: See *acid precipitation.*

acid soil: Soil with a pH value less than 7.0; for most practical purposes, a soil with a pH value less than 6.6. The term is usually applied to the surface layer or to the root zone unless specified otherwise.

acre-foot: The volume of water that will cover one acre to a depth of one foot.

actinomycetes: A large group of moldlike microorganisms that give off an odor characteristic of rich earth and are the significant organisms involved in the stabilization of solid wastes by composting.

activated carbon: A highly adsorbent form of carbon used to remove odors and toxic substances from gaseous emissions. In advanced waste treatment, it is used to remove dissolved organic matter from waste water.

activated sludge: Sludge that has been aerated and subjected to bacterial action; it is used to speed the breakdown of organic matter in raw sewage during secondary waste treatment.

acute toxicity: Any poisonous effect produced by a single short-term exposure that results in severe biological harm or death.

adaptation: A change in structure or habit of an organism that produces better adjustment to its surroundings.

additive effects (pollution): The combined toxic effects of several pollutants, acting together or independently, to cause a total response equal to the sum of the separate reactions. See *antagonism.*

adhesion: The molecular attraction which holds the surfaces of two substances in contact, such as water and rock particles.

adsorption: The adhesion of a thin film of liquid or gas to the surface of a solid substance; the solid does not combine chemically with the adsorbed liquid or gas.

adulterants: Chemical impurities or substances that, by legislation, do not belong in a food, plant, animal, or pesticide formulation.

aeration: 1. The process of being supplied or impregnated with air. 2. In waste treatment, the process used to foster biological and chemical purification. 3. In soils, the process by which air in the soil is replenished by air from the atmosphere. The rate of aeration depends largely on the volume and continuity of pores in the soil. The zone of aeration is the zone between the land surface and the water table.

aerial stocking: The release of small fish into a lake from an airplane.

aerial survey: A survey using photographic, electronic, or other data obtained from an airborne station.

aerie: The nest of a bird, especially a bird of prey, on a cliff, crag, or mountaintop.

aerobic: Life or processes that depend on the presence of oxygen.

aerobic organism: Any organism that requires oxygen to live.

aerosol: A suspension of liquid or solid particles in a gas.

aesthetics: The appeal or appreciation of the beauty of objects, animals, plants, scenes, natural or improved areas to a viewer.

afforestation: The establishment of a forest by planting or sowing on land that had not previously, or recently, grown trees.

afterburner: A device, composed of an auxiliary fuel burner and a combustion chamber, used to dissipate combustible air wastes into the atmosphere.

age class: A descriptive term to indicate the relative age of organisms. Animals produced during the same year are said to be of the same age class.

age-ratio: The ratio of young to old animals in a population.

age-specific birth rate: The number of live births to females in a specific age group (such as 25-29) per 1,000 females in that age group at midyear.

age-specific death rate: The number of deaths in a specific age group per 1,000 individuals in that age group at midyear.

age structure (age distribution): The number or percentage of persons at each age level in a population.

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aggradation: The process of building up a surface by deposition; a long-term or geologic trend in sedimentation.

aggregate: Crushed rock or gravel screened to sizes for use in road surfaces, concrete, or bituminous mixes.

aggregation (soil): The cementing or binding together of several to many soil particles into a secondary unit, aggregate, or granule. Water-stable aggregates that will not disintegrate easily are of special importance to soil structure.

agribusiness: The sum of all operations involved in the production, storage, processing and wholesale marketing of agricultural products.

agrichemicals: Chemical materials used in agriculture; sometimes used erroneously to emphasize a supposed difference between "chemical materials" and "natural materials."

agricultural land: All land devoted to crop or livestock production; e.g., farmstead, drainage and irrigation ditches, ponds, cropland, and grazing land on farms.

agricultural pollution: Pollution that results from (often careless or improper) farming operations, including runoff of pesticides, fertilizers, or feedlot wastes; irrigation leachates; dust from tillage; smoke; and transported crop residues and debris.

agricultural use: The use of any tract of land for the production of animal or vegetable life; uses include, but are not limited to, the pasturing, grazing, and watering of livestock and the cropping, cultivation, and harvesting of plants.

agricultural waste: The unwanted residues that result from the production of food or fiber crops on a farm or ranch.

air monitoring: The continuous sampling and measuring of contamination in the atmosphere.

air pollution: An abnormally high level of a normal component of the atmosphere, a harmful chemical normally not present in the air, or harmful chemicals formed in the atmosphere (photochemical smog). The level deemed harmful is culturally determined.

air pollution episode: The occurrence of abnormally high concentrations of air pollutants, usually due to low winds and temperature inversion, accompanied by an increase in illness and death. See *inversion*.

air quality control region: Geographical areas wherein two or more communities establish and enforce air quality standards.

air quality criteria: The levels of pollution and lengths of exposure above which adverse effects on health and welfare may occur.

air quality standards: The level of pollutants, prescribed by legislation, that cannot be exceeded during a specified time in a defined area.

airshed: A common air supply demarcated by arbitrary or convenient borders, such as an urban area.

algae (sing., alga): Simple, chlorophyll-containing plants (many microscopic) which form the base of the food chain in aquatic environments. Some species may create a nuisance when environmental conditions are suitable for prolific growth.

algal bloom: The proliferation of living algae on the surface of lakes, streams, or ponds; stimulated by phosphate enrichment.

algicide: One of a group of plant poisons used to kill filamentous algae and phytoplankton.

alkali: The term is applied to the soluble salts (especially sulfates and chlorides of sodium, potassium, and magnesium, and the carbonates of sodium and potassium) which are present in some soils of arid and semiarid regions in sufficient quantities to be detrimental to ordinary agriculture.

alkaline: That which has the properties of an alkali; opposite of acidic.

alkaline soil: A soil that has a pH value greater than 7.0, particularly above 7.3, throughout most or all of the root zone, although the term is commonly applied to only the surface layer or horizon of a soil.

all-aged forest: A stand that contains trees of all, or almost all, age classes, including those of harvestable size.

alluvial: That which pertains to material that is transported and deposited by running water.

alluvial fan: A sloping, fan-shaped mass of sediment deposited by a stream where it emerges from upland onto a plain.

alluvial land: Areas of unconsolidated alluvium, generally stratified and varying widely in texture, recently deposited by streams and subject to frequent flooding.

alluvial soil: Soil that has developed from transported and relatively recently deposited material (alluvium), characterized by little or no modification of the original material by soil-forming processes.

alluvium: A general term for all detrital material deposited or in transit by streams; it includes gravel, sand, silt, clay and all variations and mixtures of these.

alpha particle: A form of radiation identical with the helium nucleus; the least penetrating of the three common types of radiation (alpha, beta, and gamma) and usually not dangerous to plants, animals or man.

alpine: That portion of mountains above tree growth, or organisms living there.

ambient air: Any unconfined portion of the atmosphere; the outside air.

ambient air quality standard: A legal limit on the amount of a given pollutant that is permitted in the ambient air.

anadromous fish: Fish that ascend rivers from the sea at certain seasons for breeding. See *catadromous*.

anaerobic: The absence of molecular oxygen; growing or occurring in the absence of molecular oxygen. See *aerobic*.

anaerobic decomposition: The dissolution process of organic matter caused by bacterial and other microbes that do not require free or dissolved oxygen for metabolism.

anaerobic organism: An organism that does not require oxygen to live.

angle of repose: An angle between the horizontal and the maximum slope that a soil assumes through natural processes.

animal unit: A measurement of livestock numbers based on the equivalent of a mature cow (approximately 1,000 pounds live weight); roughly, one cow, one horse, one mule, five sheep, five swine, or six goats. Abbr. A.U.

animal unit month: A measure of forage or feed requirement to maintain one animal unit for a period of 30 days. Abbr. A.U.M.

annual flood: 1. The highest peak discharge in a water year. 2. A stream overflow that occurs "regularly" once each year.

annual food plot: A small area of land planted to a mixture of annual plants which produce an abundance of small seeds as supplemental food for wild animals; the crop is not harvested, but is left standing in the field.

annual (growth) layer: A growth layer produced in one year; in cross section it appears as an annual (growth) ring. In temperate zones layer and year generally coincide.

annual plant: A plant that completes its life cycle and dies in one year or less.

annulus: The line between successive zones of growth on fish scales or other hard parts of fish which have no scales. The rate of growth and age of fish may be determined by studying the series of annuli.

antagonism (pollution): The combined toxic reaction of several pollutants, acting simultaneously or independently, to cause a total response less than their separate effects. See *additive effects.*

anthropomorphism: The ascription of human characteristics to non-human objects (especially animals).

anticoagulant: A chemical that interferes with blood clotting.

anti-degradation clause: A provision in air and water quality standards that prohibits deterioration of air and water quality in areas where the pollution levels are presently below those allowed by the standards.

anti-seep collars: Collars around pipe conduits to inhibit seepage along the conduit.

aphotic zone: That portion of a body of water to which light does not penetrate with sufficient intensity to have any biological significance. See *euphotic zone.*

application rate (irrigation): The rate at which water is applied per unit area, usually in inches per hour; also, the weight or volume of a fertilizer, soil amendment, or pesticide applied per unit area.

approximate original contour: The surface configuration achieved by backfilling and grading of mined areas so that the reclaimed area, including any terracing or access roads, closely resembles the general surface configuration of the land prior to strip mining and blends into and complements the drainage pattern of the surrounding terrain.

apron: A floor or lining to protect a surface from erosion (e.g., the pavement below chutes, spillways, or at the toes of dams).

aquaculture: The controlled cultivation of aquatic plants and animals, especially foodstuffs such as fish, oysters, etc.

aquatic plants: Plants having true roots, stems, and leaves, which grow in or near water.

aquifer: A geologic formation or structure that transmits water in sufficient quantity to supply the needs for a water development; usually saturated sands, gravel, fractures, and cavernous and vesicular rock. The term water-bearing is sometimes used synonymously with aquifer when a stratum furnishes water for a specific use.

arable land: Land that is suitable for the production of cultivated crops.

arboreal: 1. Of or like a tree. 2. Living in, or adapted for living in, trees.

arboretum: A collection of plants, trees, and shrubs grown for public exhibition, public enjoyment, recreation, education, or research.

arboriculture: The cultivation of trees and shrubs, individually or in small groups, generally for ornament and instruction rather than use or profit.

area flooded: An area of a floodplain that is flooded in a specific stream reach, watershed, or river basin. It may be expressed for a single flood event, but is usually expressed as an average, annual value based on the sum of areas from all individual flood events over a long period of time, such as 50 to 100 years.

area mining: Surface mining that is carried on in level to gently rolling topography on relatively large tracts.

area source: A geographic area from which air pollution originates.

arid: Regions or climates that lack sufficient moisture for crop production without irrigation. The limits of precipitation vary considerably according to temperature conditions, with an annual upper limit for cool regions of 10 inches or less, and for tropical regions of as much as 15 to 20 inches.

arithmetic growth: The growth that results from repeated addition of a constant; a plotted graph yields a straight line.

artesian water: Water naturally confined under enough pressure to cause it to rise above the level where it is encountered in drilling. Flowing artesian wells are produced when the pressure is sufficient to force the water above the land surface.

artificial: That which is produced or modified by human skill or labor, often as an imitation of something found in nature. (The term is based upon the erroneous concept that man is apart from nature, hence that something that is man-made is not "natural.")

artificial selection: The process of selection by man for the improvement and reproduction of plants and animals which possess certain desired qualities.

A-scale sound level: The measurement of sound approximating the auditory sensitivity of the human ear; used to measure the relative noisiness or annoyance of common sounds.

ash: The incombustible material that remains after a fuel or solid waste has been burned.

aspect (forestry): The direction that a slope faces.

assimilation (water pollution): The ability of a body of water to purify itself of organic pollution.

association: A climax plant community identified by the combination of dominant species present.

atmosphere: The layer of air surrounding the earth.

atom: The smallest portion of an element that can take part in a chemical reaction.

atomic pile: A nuclear reactor.

attractant: A sound, light, or sex lure used in pest control to confuse pests so they can't find mates, or to draw them into traps containing toxic chemicals.

attrition: 1. The wearing or grinding down of a substance by friction. (One of three basic contributing processes to air pollution; see *combustion, vaporization.*) 2. A gradual reduction in number of organisms due to constant stress and death.

audiometer: An instrument that measures hearing sensitivity.

autotroph: An organism that synthesizes its food from inorganic substances.

autotrophic: Self-nourishing; denotes those organisms that do not require an external source of organic materials, such as green plants or pigmented flagellates. See *heterotrophic.*

auxiliary spillway: A dam spillway built to carry runoff in excess of that carried by the principal spillway.

available forage: Forage that is accessible for animal consumption.

available nutrient: That portion of any element or compound in the soil that readily can be absorbed and assimilated by growing plants.

available water: The portion of water in a soil that can be absorbed by plant roots.

azimuth: The direction of a line given as an angle, measured clockwise from reference direction, usually true north.

B

backfill: The material used to refill an excavation, or the process of doing so.

backfire: A fire started intentionally ahead of an advancing fire to remove flammable material and thus stop or control the main fire.

background level: The level of a substance present in natural sources.

bacteria: Any of many single-celled microorganisms (class Schizomycetes) that occur in a wide variety of forms and have a wide range of biochemical properties. Some are aerobic, some anaerobic, some facultative (capable of living under different environmental conditions). Many bacteria are pathogenic, but many are vital to such ecological processes as decomposition.

baffle: 1. A deflector that changes the direction of flow or velocity of water, sewage, or particulate matter. 2. A device used to deaden sound.

bag (wildlife): 1. To kill or capture wild animals, particularly mammals and birds. 2. The number of animals so taken.

baghouse: An air pollution abatement device used to trap particulates by filtering gas streams through large fabric bags usually made of glass fibers.

baiting: The spreading of food or other essential (e.g., salt for deer) to attract animals to a site for the purpose of harvesting them, trapping them for relocation, or otherwise modifying their normal routine.

baler: A machine used to compress and bind solid waste or other materials.

baling: The compacting of solids into blocks to reduce volume.

ballistic separator: A machine that sorts organic from inorganic matter for composting.

band application: The spreading of chemicals over or next to each row of plants in a field.

bank application: The spreading of chemicals over or next to each row of plants in a field.

bank storage: Water absorbed by the bed and banks of a stream, reservoir, or channel, and returned in whole or in part as the water level falls.

barren land: Land which is devoid of plant, and thus animal, life and is subject to heavy erosion.

bar screen (waste water treatment): A screen that removes large floating and suspended solids.

basal application: The spreading of a chemical on stems or trunks just above the soil line.

basal area: 1. (forestry) The area of the cross section (measured inside or outside the bark, usually the latter) of a single tree or of all trees in a stand, usually expressed in square feet. 2. (range) The area of ground surface covered by the stem or stems of a range plant, usually measured one inch above the soil, in contrast to the full spread of the foliage.

baseflow: The stream discharge composed of groundwater drainage and delayed surface drainage.

base level: The theoretical limit toward which erosion constantly tends to reduce the land. Sea level is the general base level, but in the reduction of the land there may be many temporary base levels which, for the time being, the streams cannot reduce. These temporary base levels may be controlled by the level of a lake or river into which the stream flows or by a particularly resistant stratum of rock that the stream has difficulty in removing.

base map: A map showing certain basic data to which other information may be added.

base period: A period of time from which comparisons of other time periods are made, normally used with reference to price, population, production or other statistics.

basic crops: Crops such as corn, wheat, and cotton that are most important in the agricultural economy due to acreage, value, or climate.

basin (hydrology): The area drained by a river.

bathyal zone: The middle or open-water zone in an ocean below the level to which light penetrates. Compare *abyssal zone, euphotic zone.*

bedding: 1. (soil engineering) A method of surface drainage consisting of narrow-width plowlands in which the dead furrows run parallel to the prevailing land slope and are used as field drains; also known as crowning or ridging. 2. (agriculture) A method of preparing seedbeds for row crop culture; also used for irrigation or drainage.

bed load: The sediment that moves by sliding, rolling, or bounding along a streambed at velocities less than the surrounding water flow.

bedrock: The solid rock underlying soils and the regolith in depths ranging from zero (where exposed by erosion) to several hundred feet.

benchmark: A fixed reference, usually placed on or near the ground, giving the measurement in elevation of that point in relation to mean sea level or some other reference datum.

benefit-cost-ratio: An economic indicator of the efficiency of a proposed project, computed by dividing benefits by costs; usually, both the benefits and costs are discounted so that the ratio reflects efficiency of future benefits and costs in terms of present value.

benthic region: The bottom of a body of water.

benthos: The plant and animal life whose habitat is the bottom of a sea, lake, or river.

bentonite: A highly plastic clay consisting of the minerals montmorillonite and beidellite that swells extensively when wet.

berm: 1. (mining) A strip of coal left in place temporarily for use in hauling or stripping; a layer of large rock or other relatively heavy, stable material placed at the outside bottom of the spoil pile to help hold the pile in position (a toe walk); also used similarly higher in the spoils for the same purpose. 2. (erosion control) A shelf or relatively flat area that breaks the continuity of a slope; used on earth dams and cut slopes to increase stability.

best management practice: A practice or combination of practices that are determined by a state or designated areawide planning agency to be the most effective and practicable (including technological, economic, and institutional considerations) means of controlling point and non-point pollutants at levels compatible with environmental quality goals. Abbr. BMP.

beta particle: A form of radiation having the same charge and mass as electrons; intermediate in penetration among the three common types of radiation (alpha, beta, and gamma). Beta radiation may be stopped by a thin sheet of metal.

biennial plant: A plant that requires two years to complete its life cycle.

bioaccumulation: A build up of specific organic or inorganic compounds within tissues of given organisms; usually applied to certain heavy metals, pesticides, or metabolites.

bioassay: The employment of living organisms to determine the biological effect of some substance, factor, or condition.

biochemical oxidation: The process by which bacteria and other microorganisms feed on complex organic materials and decompose them. Self-purification of waterways, activated sludge, and trickling filter wastewater treatment processes depend on this principle.

biochemical oxygen demand (BOD): The dissolved oxygen required to decompose organic matter in water. It is a measure of pollution since heavy waste loads have a high demand for oxygen.

biocide: Any substance that kills living organisms.

bioconversion: Conversion of one form of energy into another by plants or microorganisms.

biodegradable: The property of a substance that allows significant breakdown of its physical and/or chemical structure by microorganisms.

biogeochemical cycles: Those processes by which chemicals such as carbon, oxygen, phosphorus, nitrogen, and water are moved through the ecosphere to be renewed over and over again. The three major types of cycles are: gaseous, sedimentary, and hydrological.

biological control: A method of controlling pest organisms by means of introduced or naturally occurring predatory organisms, sterilization, the use of inhibiting hormones, or other biological methods, rather than by mechanical or chemical means.

biological magnification: The increasing concentration of a substance along succeeding steps in a food chain.

biomass: The amount of living matter in a given unit of the environment.

biome: A major biotic unit consisting of plant and animal communities having similarities in form and environmental conditions.

biomonitoring: The use of living organisms to test quality of some aspect of the environment.

biosphere: The portion of earth and its atmosphere that can support life.

biostabilizer: A machine that converts solid waste into compost by grinding and aeration.

biota: All living organisms that exist in an area.

biotic: That which pertains to life.

biotic factors: In ecology, those environmental factors which are the result of living organisms and their activities, distinct from physical and chemical factors, such as competition and predation. See *ecological factor.*

biotic influence: The influence of animals and plants on associated plant or animal life as contrasted with climatic influences and edaphic (soil) influences.

biotic potential: The inherent, theoretical capacity of species to reproduce and survive.

biotic pyramid: A graphic representation of (1) the flow of energy from the sun progressively through producers (green plants), herbivores, and carnivores; and (2) the transfer of nutrients progressively along a food chain from soil and water to plants, herbivores, and carnivores.

birth control (fertility control): All methods of controllingconception, plus abortion.

birth rate (crude birth rate): The number of live births in one year per 1,000 population at midyear.

blind: A place of concealment from which wildlife can be shot, photographed, observed, or studied at close quarters.

bloom: A readily visible concentrated growth or aggregation of minute organisms, usually algae, in bodies of water.

blown-out land: Areas from which all or almost all of the soil and soil material has been removed by wind erosion; usually barren, shallow depressions with a flat or irregular floor unfit for crop production.

blowout: An excavation in areas of loose soil, usually sand, produced by wind.

boardfoot: A unit of measure of the wood in lumber, logs, bolts or trees; the amount of wood in a board one foot wide, one foot long, and one inch thick before surfacing or other finishing. Abbr. Bd. Ft.

bog: Wet, spongy land which is usually poorly drained, highly acid, and rich in plant residue; the result of lake eutrophication.

boiling water reactor (BWR): A nuclear reactor in which water heated by a reactor core becomes steam to drive a turbine.

bole: A tree stem once it has grown to substantial thickness—roughly, a size capable of yielding saw timber, veneer logs, or large poles.

boom (water pollution): A floating device used to contain oil on a body of water.

border (wildlife management): A strip of herbaceous or woody vegetation, usually low-growing and more than ten feet wide, established along the edges of fields, woodlands, or streams.

borrow pit: An area of excavation outside the limits of construction to provide fill for earthworks.

botanical pesticide: A plant-produced chemical used to control pests; for example, nicotine or strychnine.

bounty: A payment made for the killing of an animal of a designated species (usually a predator) deemed harmful to man's interests.

brackish: A term applied to water having a saline content that is intermediate between that of freshwater streams and sea water; neither fresh nor salty.

breeder reactor: A nuclear reactor that produces more nuclear fuel than it consumes. It accomplishes this by converting nonfissionable uranium-238 into fissionable plutonium-239.

breeding herd: Livestock retained for breeding purposes to provide for the perpetuation of the herd or band (excludes animals being prepared for market).

breeding potential: See *reproductive potential.*

broadcast: To scatter a substance (e.g., seed or fertilizer) over the surface of the ground.

broad spectrum pesticide: A chemical that kills more than the target species.

brood stock: A population of animals that are capable of reproduction which are kept for breeding purposes.

browse: (n.) The twigs or shoots, with or without attached leaves, of shrubs, trees or woody vines available as forage for domestic and wild browsing animals. (v.) To nibble or eat browse.

browse line: The line on woody plants marking the height to which browsing animals have removed browse.

brush: A heavy growth of shrubs or small trees without commercial value.

brush pile: A small stack of cut branches, shrubs, and other woody vegetation which serves as protective cover for small wild animals.

buffer species: 1. Any organism that serves as a substitute food supply and thus relieves pressure upon a more preferable (to the consumer) organism. 2. (game management) A nongame species that serves as food for predators and thus relieves predation on a game species.

buffer strips: The strips of grass or other erosion-resisting vegetation between or below cultivated strips or fields.

buffer zone: An area or strip surrounding another specific area, in part or entirely, to protect the inner area from disturbance by influences from the outside.

bulky waste: Those large items of waste material, such as appliances, furniture, large auto parts, trees, branches, stumps, and others.

bunch grass: A grass having a characteristic growth habit of forming a tuft or bunch.

burn: An area over which fire has run.

burrow: A hole in the ground used by certain species of animals for habitation.

C

callus: A tissue of thin-walled cells developed on plant wound surfaces; most evident, in time, after cutting off a tree limb flush with a main trunk or limb.

calorie: The amount of energy required to raise the temperature of one gram of water one Celsius degree.

cambium: A layer of delicate tissue between the inner bark of a tree and the wood that produces secondary growth; responsible for the annual rings of wood.

candle: The growing terminal shoot of certain conifers, notable pines, whose silvery-white bud scales or secretion of waxy white cuticle give it the appearance of a white candle.

canopy: The more or less continuous cover of branches and foliage formed *collectively* by the crowns of adjacent trees and other woody growth.

carbon cycle: The sequence of transformations whereby carbon dioxide is fixed as carbon or carbon compounds in living organisms by photosynthesis or chemosynthesis, liberated by respiration and/or death and decomposition of the fixing organism, used by deterotrophic species, and ultimately returned to its original state to be used again.

carbon dioxide (CO_2): A colorless, odorless, nonpoisonous gas, produced during combustion and microbial decomposition, that forms carbonic acid when dissolved in water.

carbon monoxide (CO): A colorless, poisonous gas, produced during combustion and microbial decomposition when the oxygen supply is limited, that has an exceedingly faint metallic odor and taste.

carcinogenic: That which tends to produce or incite cancer.

carnivore: A flesh-eating animal or plant.

carrion: The putrifying dead body of an animal.

carrying capacity: The maximum population that a given ecosystem can support indefinitely.

catadromous fish: Fish that spend most of their life in freshwaters, but migrate to the sea to spawn, such as the American eel.

catalytic converter: An air pollution abatement device that removes organic contaminants by oxidizing them into carbon dioxide and water.

catch crop: 1. A crop produced incidental to the main crop of the farm and usually occupying the land for a short period. 2. A crop grown to replace a main crop which has failed.

catch rate: See *harvest rate.*

catchment: A reservoir or basin developed for flood control, or for water management for livestock and/or wildlife.

catface: A defect on the surface of a tree or log resulting from a wound where healing has not reestablished the normal cross-section.

cells (solid waste disposal): The holes filled daily with waste which is dumped, compacted, and covered with layers of dirt.

cellulose: A complex carbohydrate occurring in wood and all other vegetable material. Wood cellulose fibers are basic components of lumber, wood pulp, and many other useful products.

census: A complete counting, with classification, of a population or group at a given time.

centrifugal collector: A mechanical system using centrifugal force to remove aerosols from a gas stream, or to de-water sludge.

cereal: Any of several species of grass which produce grain that is used for human food; e.g., wheat, corn, rice, oats, rye, and barley.

cesspool: A lined and covered excavation in the ground which receives the discharge of domestic sewage or other organic wastes from a drainage system. The design is such as to retain the organic matter and solids, but permit the liquids to seep through the bottom and sides.

CFS (cubic feet per second): A measure of the amount of water passing a given point in one second.

chain reaction: The sequence by which neutrons emitted from one radioactive atom bombard another atom and cause it to emit neutrons which bombard yet another atom, and so on.

channel: A natural stream that conveys water; a ditch or channel excavated for the flow of water.

channel modification (channelization): The alteration of the flow characteristics of a channel by clearing, excavating, realignment, lining, or other means in order to increase its capacity. (The term is sometimes used to connote channel stabilization.)

channel stabilization: The process of preventing erosion and stabilizing velocity distribution in a channel by using jetties, drops, revetments, vegetation and other measures.

check dam: A small dam constructed in a gully or other small watercourse to decrease streamflow velocity, minimize channel scour, and promote deposition of sediment.

check station: Any location where hunters, fishermen, or other visitors to an area are counted, registered, or given information; where fees are collected; and/or where the catch or bag is reported or delivered.

chemical oxygen demand (COD): A measure of the oxygen required to oxidize all compounds in water.

chemosterilant: A chemical that controls pests by destroying their ability to reproduce.

chilling effect: The phenomenon by which the increase in atmospheric particulates inhibits penetration of the sun's energy, thus gradually lowering the temperature of the earth.

chiseling: Breaking or loosening soil with limited inversion by means of a chisel plow or cultivator; the amount of inversion depends on the width and/or slope of the chisel points and sweeps on the chiseling implement.

chisel planting: Seedbed preparation by chiseling without inversion of the soil, leaving a protective cover of crop residue on the surface for erosion control. (Seedbed preparation and planting may or may not be in the same operation.)

chlorinated hydrocarbon insecticides: Any of the synthetic, organic, nervous system poisons containing chlorine, hydrogen, and carbon. Highly stable and fat-soluble, they tend to be recycled through food chains, thereby affecting non-target organisms. Members include DDT, aldrin, dieldrin, endrin, chlordane, heptachlor, toxaphene, and BHC.

chlorination: The application of chlorine to drinking water, sewage, or industrial waste to disinfect or to oxidize undesirable compounds.

chlorinator: A device that adds chlorine to water in gaseous or liquid form.

chlorine residual: The quantity of chlorine remaining in water or wastewater at the end of a specified contact period.

chlorophyll: A green photosynthetic pigment present in many plant and some bacterial cells. There are seven known types of chlorophyll; their presence and abundance vary from one group of photosynthetic organisms to another.

chlorosis: The abnormal yellowing of normally green plant parts, usually a symptom of disease, nutrient deficiency, root or stem girdling, inadequate light, or various air pollutants.

chronic toxicity: A condition of poisonousness, marked by a long duration, that produces an adverse effect on organisms. The end result of chronic toxicity can be death, although the usual effects are sublethal, such as inhibiting reproduction or reducing growth. These effects are reflected by changes in the productivity and population structure of the community.

chute: A high-velocity, open channel for conveying water to a lower level without erosion.

clarification: The clearing action that occurs during waste water treatment when solids settle out, often aided by centrifugal action and chemically induced coagulation.

clarifier: A settling tank where solids are mechanically removed from waste water.

classification: The assignment of objects or units to groups within a system of categories distinguished by their properties or characteristics.

clay (soils): A mineral soil separate consisting of particles less than 0.002 millimeter in equivalent diameter.

claypan: A dense, compact layer in the subsoil having a much higher clay content than the overlying material from which it is separated by a sharply defined boundary. Formed by downward movement of clay, or by synthesis of clay in place during soil formation, claypans are usually hard when dry, plastic and sticky when wet. They usually impede movement of water and air, and the growth of plant roots. See *hardpan.*

clean tillage: The cultivation of a field so as to cover all plant residues and to prevent the growth of all vegetation except the particular crop desired.

clearcutting: A method of cutting that removes the entire timber stand on the area cut. See *selective cutting.*

climate: The sum total of all atmospheric or meteorological influences, principally temperature, moisture, wind, pressure, and evaporation, which combine to characterize a region and give it individuality by influencing the nature of its land forms, soils, and vegetation. See *weather.*

climax: The highest ecological development of a plant community capable of perpetuation under the prevailing climatic and edaphic conditions.

clod: A compact, coherent mass of soil ranging in size from five to ten millimeters (.2 to .4 inches) to as much as 200 to 250 millimeters (8 to 10 inches). Clods are produced artificially, usually by man's plowing, digging, etc., especially when these operations are performed on soils that are either too wet or too dry for normal tillage operations.

closed population: A population with no immigration or emigration, so that any change in population numbers are due only to natility and mortality.

closed season: The period of time during which the pursuit or taking of wildlife is prohibited.

closed system: Any system in which energy, but not matter, is exchanged between the system and its surroundings. (For all practical purposes earth is a closed system.)

cluster development: A variation in subdivision design in which building lots are made smaller and grouped together on only part of a site, thereby leaving the remaining land open for recreational or other purposes. Such a plan generally maintains the same overall density as the conventional subdivision design.

clutch: The total number of bird or reptile eggs laid in one nesting.

coagulation: The clumping of particles in order to settle out impurities; often induced by chemicals such as lime or alum.

coastal zone: The narrow region where ocean and land meet, and where estuaries, lagoons, marshes, beaches, cliffs, bays, harbors, spits, and peninsulas are the major physical features.

coefficient of haze (COH): A measurement of visibility interference in the atmosphere.

cohesion: A force holding a solid or liquid together because of the attraction between like molecules; cohesion decreases with rise in temperature.

cohort: Any group of persons simultaneously experiencing a demographic event. (A birth cohort consists of all persons who were born in a given year; a marriage cohort consists of all persons who were married in a given year.)

coldwater fish: A fish that requires relatively cool water for survival; optimum temperatures for species vary, but most are found in water where temperatures are 20°C or less.

coldwater stream: A stream that supports a coldwater fishery, usually including trout. (Optimum temperatures are 10°C to 15°C.)

coliform: A group of bacteria used as an indicator of sanitary quality in water. The total *coliform* group is an indicator of sanitary significance, because the organisms are normally present in large numbers in the intestinal tracts of humans and other warm-blooded animals.

coliform index: A rating of the purity of water based on a count of fecal bacteria.

collector: A mechanical device designed to remove suspended particles from gaseous emissions arising from industrial processes. Types include:

- **bag type:** A filter in which the filtering medium is a cylindrical fabric bag.
- **cyclone:** A collector in which an inlet gas stream is made to move vortically; its centrifugal forces tend to drive suspended particles to the wall of the cyclone.
- **dust:** Any device used to remove dust from exhaust gases.
- **fly ash:** Equipment used to remove fly ash from combustion gases.
- **mechanical:** A device in which inertial and gravitational forces separate dry dust from gas.
- **multicyclone:** A dust collector consisting of a number of cyclone collectors that operate in parallel.

colluvial (soils): Material that has moved downhill by the force of gravity, and to some extent by frost action and local wash, and has accumulated on lower slopes and/or at the bottom of the hill. (Also called *colluvium.*) See *soil creep.*

combined sewers: A system that carries both sewage and storm water runoff.

combustion: Burning, or a rapid oxidation, accompanied by release of energy in the form of heat and light. (One of three basic contributing processes of air pollution; see *attrition, vaporization.*)

combustion chamber: That part of an incinerator or furnace where combustion or burning takes place; types include:

- **primary:** The chamber in an incinerator where waste is ignited and burned.
- **secondary:** The chamber in an incinerator where combustible solids, vapors, and gases from the primary chamber are burned and fly ash is settled.

comminution: The process of mechanically shredding or pulverizing waste during solid waste management or waste water treatment.

comminutor: A machine that grinds solids to make waste treatment easier.

commons: All natural resources, especially land, reserved for common use. (Many experts in environmental law treat rivers, lakes, oceans, and the atmosphere as commons.)

community: 1. An aggregation of organisms within a specified area. 2. People living within the same district, city, etc., under the same laws.

community air: The ambient air in the immediate vicinity of a community.

compaction: 1. (soils) Any process by which soil particles are compressed closer together, thereby reducing volume and air space, increasing density, and reducing the infiltration rate. Soil compaction, other than for construction purposes, is usually detrimental. Farm machinery, vehicles, and trampling by livestock are major causes of soil compaction. 2. (solid waste disposal) The reduction in bulk by rolling and tamping.

compactor: A mechanical device used to reduce the void space in solid wastes.

companion crop: A crop sown with another crop; one crop generally matures more quickly and is harvested before the later maturing crop needs more space to develop.

compensation depth (level): The depth in a lake at which photosynthesis balances respiration.

competition: The general struggle for existence within a trophic level as the living organisms compete for a limited supply of the necessities of life.

compost: Organic residues, or a mixture of organic residues and soil, that have been piled and allowed to undergo biological decomposition until relatively stable.

composting: A controlled process of decomposing organic matter. Techniques include:

- **mechanical:** A method in which the compost is continuously and mechanically mixed and aerated.
- **ventilated cell:** The compost is mixed and aerated by being dropped through a vertical series of ventilated cells.
- **windrow:** An open-air method in which compostable material is placed in windrows, piles, or ventilated bins or pits, and occasionally turned or mixed. The process may be either anaerobic or aerobic.

condensation: The physical process by which a vapor becomes a liquid or solid.

condition factor: A numerical index, usually applied only to fishes, which represents the relationship between length and weight of the animal.

conduction: The transfer of heat by physical contact between two or more objects.

cone of depression: The depression, roughly conical in shape, produced in a water table or piezometric surface by the extraction of water from a well.

conifer: A tree belonging to the order Coniferae with cones and evergreen leaves of needle or "scalelike" shape. The tree is harvested to produce wood known commercially as "softwood."

conservation: 1. The wise use of natural resources. (The criteria for "wise use" can be the original concept of conservation by Pinchot: "greatest good for greatest number in the long run.") 2. "A state of harmony between man and the land."...Aldo Leopold.

conservation district: A public organization created under state enabling law as a special-purpose district to develop and carry out a program of soil, water, and related resource conservation, use, and development within its boundaries; usually a subdivision of state government with a local governing body. A conservation district may also be called a *soil conservation district*, or a *soil and water conservation district.*

conservation education: Those activities and experiences that result in learning about *man's* dependency upon, and use (or abuse) of, natural resources for all of his necessities, needs, and wants.

conservation plan: The written decisions of a cooperating landowner or operator within a conservation district, as to how he plans to use and to treat his land for maintenance or improvement of the soil, water, and plant resources.

conservation tillage: Any tillage sequence that reduces loss of soil or water relative to conventional tillage; it is often a form of non-inversion tillage that retains a protective mulch of crop residue on the surface.

construction waste: Waste materials produced in the construction of homes, office buildings, dams, industrial plants, schools, etc.

consumer: An organism that lives off other organisms. Consumer organisms are often designated as primary consumers (herbivores), secondary consumers (carnivores), and microconsumers (decomposers).

consumer waste: Materials which have been used and discarded by the buyer, or consumer, as opposed to "in-plant" waste, or waste created in the manufacturing process.

consumptive use (water): The quantity of water used and transpired by vegetation plus that evaporated. See *evapotranspiration*.

contact herbicide: A herbicide that kills primarily by contact with plant tissue rather than as a result of translocation.

contamination: The act of polluting or making impure; used to indicate chemical, sedimentary, or bacteriological impurities.

continental shelf: The shallow, gently sloping portion of the seabottom which borders a continent.

continental slope: The steeply sloping portion of the seabottom which extends seaward from the continental shelf.

continuous grazing: The grazing by domestic livestock of a specific area throughout the grazing season; not necessarily synonymous with year-long grazing.

contour: 1. An imaginary line on the surface of the earth connecting points of the same elevation. 2. A line drawn on a map to indicate points of the same elevation.

contour farming: The conducting of field operations (e.g., plowing, planting, cultivating, and harvesting) on the contour.

contour furrows: Furrows plowed approximately on the contour on pasture and rangeland to prevent runoff and increase infiltration; also, furrows laid out approximately on the contour for irrigation purposes.

contour interval: The vertical distance between contour lines.

contour stripcropping: The layout of crops in comparatively narrow strips in which the farming operations are performed approximately on the contour. Usually strips of grass, close-growing crops, or fallow are alternated with strips of cultivated crops.

contour stripping: The surface mining of a coal seam that outcrops or approaches the surface at approximately the same elevation in steep or mountainous areas.

contrails: The long narrow clouds caused when high-flying jets disturb the atmosphere.

control: A standard of comparison for checking or verifying the results of an investigation or experiment.

controlled burning: The deliberate use of fire so as to restrict the burning to a predetermined area and intensity. See *prescribed burning*.

control rods: The neutron absorbing rods that are raised or lowered in the core of a nuclear reactor to control the rate of nuclear fission.

convection: The transfer of heat through a gas or solution because of molecular movement.

conventional tillage: The combined primary and secondary tillage operations normally performed in preparing a seedbed for a given crop grown in a given geographical area.

conversion: A resource recovery method using chemical or biological processes to change waste materials into other useful forms; e.g., incineration to produce heat; pyrolysis to produce gas, oil and char; and composting to produce a humus-like soil conditioner.

coolant: A liquid or gas used to reduce the heat generated by power production in nuclear reactors or electric generators.

cooling pond or canal: A man-made body of water used to absorb the heat from the cooling water in a power or industrial plant, and to transfer it to the air before the water is reused or returned to a natural body of water.

cooling sprays: Water sprays directed into flue gases to cool them and, in most cases, to remove some fly ash.

cooling tower: A large man-made tower used to transfer the heat in cooling water from a power or industrial plant to the atmosphere either by direct evaporation (wet or evaporative cooling tower), or by convection and conduction (dry cooling tower).

cool-water stream: A stream that supports a coolwater fishery, usually including smallmouth bass and/or rock bass. (Spawning temperatures are commonly between 16 °C and 21 °C.)

cool-season plant: A plant that makes its major growth during the cool portion of the year.

coppice shoot: Any sprout that arises from an adventitious or dormant bud near the base of a woody plant that has been "cut" back.

coppicing: The cutting of broadleaved trees close to ground level for the purpose of their producing coppice shoots.

cord: A unit of measurement of stacked wood containing 128 cubic feet within its outside surfaces. The standard cord is a stack of wood four feet by eight feet, made up of sticks four feet long, containing about 80 solid cubic feet of wood.

cordwood: Wood cut into short lengths which is measured in cords.

core: The uranium-containing heart of a nuclear reactor, where energy is released.

core trench: The excavation for a core wall in the construction of an earth embankment.

corrosion: The solution of rocks and other materials by chemical action.

cover: Vegetation or other material used by wild animals for nesting, rearing of young, resting, escape from predators, or protection from adverse weather conditions.

cover crop: A close-growing crop grown primarily for the purpose of protecting and improving soil between periods of regular crop production, or between trees and vines in orchards and vineyards.

cover material (engineering): An (usually) earthen backfill, free of organic material, used to cover compacted waste in a sanitary landfill.

covey: A small flock or number of birds together, often functioning somewhat as a unit; the term is chiefly applied to partridges (including quail).

creel: An angler's basket for carrying the fish caught.

creel census: A canvass of anglers to gather data on their catches, time spent fishing, etc.

crest: 1. The top of a dam, dike, spillway, or weir (frequently restricted to refer only to the overflow portion). 2. The summit of a wave or peak of a flood.

critical area: A severely eroded, sediment-producing area that requires special management to establish and maintain vegetation in order to stabilize soil conditions.

cropland: Land used primarily for the production of adapted, cultivated, close-growing crops for harvest, alone or in association with sod crops; in some areas may include land used to produce fruit and nut crops.

crop residue: The portion of a plant or crop left in the field after harvest.

crop rotation: The growing of different crops in recurring succession on the same land.

crop tree: An individual tree which, because of species, form, and condition, is selected for and is most likely to be present in the final harvestable crop, usually for sawlog purposes.

crown (forestry): The upper part of a tree, including the branches and foliage.

crown fire: A fire that runs through the tops of trees, scrub, or brush.

crude oil: Raw petroleum as it comes from the earth in a liquid state; crude oil consists predominantly of hydrocarbons.

cruise (forestry): A survey of forest land to locate and estimate the timber by volume, species, size classes, products, grades, and other characteristics. Also, the estimate obtained in such a survey.

crust: A dry surface layer on soils that is much more compact, hard and brittle than the material immediately beneath it.

cull (forestry): Any item of production, such as trees, logs, or lumber, sorted out for rejection because it does not meet specifications; the term also refers to an inferior nursery seedling.

cullet (recycling): The crushed glass which is used in the manufacture of new glass.

cultivar: A variety of organism which was originated and is maintained under cultivation.

cultivation: Shallow tillage operations performed to create soil conditions conducive to improved aeration, infiltration, and water conservation, or to control weeds.

cultural eutrophication: The acceleration by man of the natural process of enrichment (aging) of bodies of water.

curie: A measure of the number of atoms disintegrating per second, thus a measure of the strength of radioactivity from a radioactive source. The curie equals 37 billion disintegrations per second, approximately the radioactivity of a gram of radium. Curies measure the radioactivity of a source; rems measure the amount of radioactivity received by a target.

cut: A portion of land surface or area from which earth has been, or will be, removed by excavation; the depth below original ground surface to excavated surface.

cut-and-fill: The process of earth moving by excavating part of an area and using the excavated material for adjacent embankments or fill areas.

cutoff: 1. A wall, collar, or other structure (such as a trench) filled with relatively impervious material intended to reduce seepage of water through porous strata. 2. The new and shorter channel formed either naturally or artifically when a stream cuts through the neck of a meander.

cut-over forest: A forest in which most or all of the merchantable timber has been cut.

cutting cycle: The planned interval between major cutting operations in a managed woodland tract.

cyclone collector: A device that uses centrifugal force to pull large particles from polluted air.

cyclic population: A population that peaks and troughs (oscillates) at "regular" intervals.

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dam: A barrier to confine or raise water for storage or diversion, to create a hydraulic head, to prevent gully erosion, or for retention of soil, rock, or other debris.

DDT (dichlorodiphenyltrichloroethane): The first chlorinated hydrocarbon insecticide, it has a half-life of 15 years and can collect in fatty tissues of certain animals. In 1972, EPA banned registration and interstate sale of DDT for virtually all but emergency uses in the U.S. because of its persistence in the environment and accumulation in the food chain.

death rate (crude death rate): The number of deaths in one year per 1,000 population at midyear.

debris: The loose materials, primarily large rock fragments and broken vegetation, transported by streams, ice, or floods.

debris guard: A screen or grate at the intake of a channel, drainage, or pump structure for the purpose of stopping debris.

decay: The disintegration of organic materials into simpler forms, or into their original elements, by action of bacteria, fungi, or other microorganisms.

decibel (dB): A unit of sound measurement.

deciduous plant: A plant that sheds all its leaves every year at a certain season (usually autumn).

decomposer: An organism, often a bacterium or a fungus, that breaks down the bodies or parts of dead plants and animals into simpler compounds.

decomposition: The breakdown of matter by organisms. It changes both the chemical composition and physical appearance of materials.

decreaser plant species: The plant species of original vegetation that will generally decrease in relative amount with continued overuse; commonly termed decreasers.

deep percolation: The downward movement of water to below the root zone where it cannot be used by plants.

deep well injection: The pumping of liquids under pressure into underground cavities and pore spaces.

deferred grazing: The discontinuance of livestock grazing on an area for a specified period of time during the growing season to promote plant reproduction, establishment of new plants, or restoration of vigor by old plants.

defoliation: An untimely reduction in the amount of foliage due to insect or fungal attack or other agencies, as distinct from normal leaf-fall. May also apply to the stripping of leaves from plants, especially by use of chemical spray.

degradable: A substance (such as organic wastes) that can be naturally decomposed by microorganisms.

degradation: 1. To wear down by erosion, especially through stream action. 2. To be contaminated by salts, chemicals, or other pollutants before being returned to the environment after being used by man.

degree of grazing: The degree of utilization of selected plant species in a designated area at the time of measurement.

degree of use: The portion of the current year's forage production that is consumed and/or destroyed by grazing animals; may refer either to a single species or to the vegetation as a whole.

delta: An alluvial deposit formed where a stream or river drops its sediment load on entering a body of more quiet water; formed largely beneath the water surface and in an area often resembling the shape of the Greek letter Delta, with a point of entry of the stream at one corner.

demographic transition: The transition, supposedly brought about by economic development, from a condition of high fertility and high mortality to a condition of substantially lower fertility and mortality for a given country or region.

demography: The statistical study of human vital statistics and population dynamics.

demonstration area: A land area of sufficient size which has definite boundaries and is used to demonstrate any of various practices such as land use, soil and water conservation, wildlife management, etc.

denitrification: The chemical or biochemical reduction of nitrate or nitrite to gaseous nitrogen, either as molecular nitrogen or as an oxide of nitrogen.

density: In biology, the number of organisms per area unit at a given time.

den tree: A tree having at least one cavity which is used by a wild animal at "regular" intervals.

depletion curve: A graphical representation of the diminishing supply of a natural resource (especially a nonrenewable resource or of a renewable resource having a very long recovery time) over a period of time. Such a curve is used to predict when the supply may become scarce or completely exhausted.

deposit: A material left in a new position by a natural transporting agent, (such as water, wind, ice, or gravity) or by the activity of man.

deposition: The accumulation of material dropped because of a slackening movement of the transporting agent (water or wind).

dermal toxicity: The ability of a chemical to poison an animal or human by skin absorption.

DES (Diethylstilbestrol): A synthetic estrogen used as a growth stimulant in food animals; residues in meat are thought by some to be carcinogenic.

desalinization (desalination): 1. The removal of salts from saline soils, usually by leaching. 2. The conversion of salt water to fresh water.

desert: An area of land that has an arid, hot to cool climate with vegetation that is sparse and usually shrubby; it is generally accepted that deserts have less than ten inches of precipitation annually.

desiccant: A chemical agent used to remove moisture from a material or object.

desilting area: An area of grass, shrubs, or other vegetation used for inducing deposition of silt and other debris from flowing water; such is often located above a stock tank, pond, field or other area needing protection from sediment accumulation.

detachment: The removal of transportable fragments of soil material from a soil mass by an eroding agent, usually falling raindrops, running water, or wind; through detachment, soil particles or aggregates are made ready for transport—soil erosion.

detention dam: A dam constructed for the purpose of temporary storage of streamflow or surface runoff and for releasing the stored water at controlled rates.

detergent: A synthetic washing agent that helps water to remove dirt and oil. Most formerly contained large amounts of phosphorus compounds which could kill useful bacteria and encourage algae growth in the receiving water.

detritus: 1. Matter worn from rocks by mechanical means; generally, detritus refers to alluvial deposits. 2. The particulate organic matter involved in the decomposition of dead animals.

detritus food chain: The transfer of energy from one trophic level to another by decomposers.

dewatering: The removal of water by filtration, centrifugation, pressing, open air drying, or other methods. Dewatering makes sewage sludge suitable for disposal by burning or landfilling. The term is also applied to the removal of water from pulp.

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dew point: The temperature at which air becomes saturated with water, thus condensing to produce dew, frost, fog, clouds, or precipitation.

diameter breast high (DBH): The diameter of a tree 4.5 feet above ground level.

diameter tape: A tape measure specially graduated so that the diameter of a tree stem or log may be read directly when the tape is placed around it.

diatomaceous earth (diatomite): A chalk-like material used to filter out solid wastes in waste water treatment plants; it is also found in powdered pesticides.

dibble: A tool for opening holes for planting seeds or small seedlings; this tool is also called *planting bar, spud,* or *planting iron.*

dieback: A condition in woody plants in which the ends of the branches die, often progressively backward, due to disease, insect injury, winter injury, or excessive or insufficient moisture.

diffused air: A type of aeration that forces oxygen into sewage by pumping air through perforated pipes inside a holding tank.

diffusion: The even mixing of one compound throughout another.

digester: In wastewater treatment, a closed tank, sometimes heated to 35 °C, where sludge is subject to intensified bacterial action.

digestion: The biochemical decomposition of organic matter. Digestion of sewage sludge occurs in tanks where it breaks down into gas, liquid, and mineral matter.

dike: In engineering, an embankment to confine or control water, especially one built along the banks of a river to prevent overflow of lowlands; a levee.

dilution ratio: The relationship between the volume of water in a stream and the volume of incoming waste. It can affect the ability of the stream to assimilate waste.

direct seeding (forestry): A method of establishing a stand of trees artificially by sowing seed. In broadcast seeding, seed is sown over the entire area. Partial seeding may be done in strips, furrow rows, trenches, or in seed spots.

direct toxicity: Toxicity that has an effect on organisms themselves rather than an effect by alteration of their habitat or interference with their food supply. See *indirect toxicity.*

discharge (hydraulics): The rate of flow, specifically fluid flow; a volume of fluid passing a point per unit of time (commonly expressed as cubic feet per second, million gallons per day, gallons per minute, or cubic meters per second).

discharge period: The period of time during which effluent is discharged.

discharge point: A location at which effluent is released into a receiving stream.

disinfection: A chemical or physical process that kills organisms that cause infectious disease.

disintegration: The reduction of rock to smaller pieces mainly by mechanical means, but sometimes used to include chemical changes.

dispersal: The movement of individual organisms or their disseminules or propagules into or out of a population or population area.

dispersant: A chemical agent used to break up concentrations of organic material such as spilled oil.

disperse: 1. To break up compound particles, such as aggre[illegible] to the individual component particles. 2. To distribute or suspend fine particles, such as clay, in or throughout a dispersion medium, such as water.

dispersion (soil): The breaking down of soil aggregates into individual particles, resulting in single-grain structure. Ease of dispersion is an important factor influencing the erodibility of soils. Generally speaking, the more easily dispersed the soil, the more erodible it is.

disposal: The transference of unwanted material, such as wastes, into new hands, a new place, or a new form.

disposal field: An area used for spreading liquid effluent for separation of wastes from water, degradation of impurities, and improvement of drainage waters; also called infiltration field or septic tank absorption field.

dissolved oxygen (DO): The amount of gaseous oxygen (O) dissolved in a liquid—usually water.

dissolved solids: The total amount of dissolved material, organic and inorganic, contained in water or wastes. Excessive dissolved solids make water unpalatable for drinking and unsuitable for industrial uses.

distillation: The removal of impurities from liquids by boiling. The steam, condensed back into liquid, is almost pure water; the pollutants remain in the concentrated residue.

distribution: 1. The geographic range of a population. 2. The pattern of occurrence of individuals within a population.

distribution system (irrigation): 1. The system of ditches and their appurtenances which convey irrigation water from the main canal to the farm units. 2. Any system that distributes water within a farm.

disturbed area: An area where vegetation, topsoil, or overburden is removed, or where topsoil, spoil, and processed waste is placed.

diurnal: 1. An event, process, or specific change that occurs every day; usually associated with changes from day to night. 2. Pertaining to those organisms that are active during day time.

diversion: A channel, embankment, or other man-made structure constructed to divert water from one area to another.

diversion dam: A barrier built to divert part or all of the water from a stream into a different course.

diversion terrace: Diversions, which differ from terraces in that they consist of individually designed channels across a hillside, may be used to protect bottomland from hillside runoff or may be needed above a terrace system for protection against runoff from an unterraced area. They may also divert water out of active gullies, protect farm buildings from runoff, reduce the number of waterways, or shorten the length of slope in connection with stripcropping.

diversity: The variety of species within a given association of organisms. Areas of high diversity are characterized by a great variety of species; usually relatively few individuals represent any one species. Areas with low diversity are characterized by few species; often relatively large numbers of individuals represent each species. Diversity enhances ecosystem stability.

dominant (ecology): A species which by its activity, behavior, or number has considerable influence or control upon the conditions of existence of associated species; a species which "controls" its habitat and food web.

dormancy: The condition of a plant or seed in which life functions are virtually at a standstill.

dose: The quantity of energy or other substance to which an object is exposed.

dosimeter: An instrument that measures exposure to radiation.

doubling time (population): The number of years it takes for a population to double in size.

drain: (n.) 1. A buried pipe or other conduit (closed drain). 2. A ditch (open drain) for carrying off surplus surface water or groundwater. (v.) 1. To provide channels, such as open ditches or closed drains, so that excess water can be removed by surface flow or by internal flow. 2. To lose water (from the soil) by percolation.

drainage: The removal of excess surface water or groundwater from land by means of surface or subsurface drains.

drainage area: 1. That surface area, enclosed by a topographic divide, and measured in a horizontal plane, from which direct surface runoff from precipitation normally drains by gravity into a stream above the specified point of measurement.

drainage district: A special purpose district created under state law to finance, construct, operate and maintain a drainage system involving a group of land holdings.

drawdown: (n.) The distance by which the fluid surface level, as in a well or a pond, is lowered by pumping, etc. (v.) The lowering of the water surface (in open channel flow), water table, or piezometric surface (in groundwater flow) by withdrawal of water.

dredging: The removal of earth from the bottom of water bodies using a scooping machine.

drift organisms: Benthic organisms temporarily suspended in the water and carried downstream by the current.

drill seeding: The planting of seed with a drill in relatively narrow rows, generally less than a foot apart.

drop-inlet spillway: An overfall structure in which the water drops through a vertical riser connected to a discharge conduit.

drop spillway: An overfall structure in which the water drops over a vertical wall onto an apron at a lower elevation.

drop structure: A structure for dropping water to a lower level and dissipating its surplus energy. A drop may be vertical or inclined.

drought: A continued period of lack of moisture, so serious that crops fail to develop and mature properly.

dryland farming: The practice of crop production in low rainfall areas without irrigation.

dry limestone process: An air pollution control method that uses limestone to absorb the sulfur oxides in furnaces and stack gases.

"duck factory": The loosely demarcated region of the northern Great Plains of the United States and adjoining provinces of Canada that contain vast numbers of shallow marshy areas that are widely used by ducks for nesting and raising of young.

duff: A general, nonspecific term which refers to the more or less firm organic layer on top of mineral soil, consisting of fallen vegetative matter in the process of decomposition, including everything from pure humus below to the litter on the surface.

dugout pond: An excavated pond as contrasted with a pond formed by constructing a dam.

dump: An open land site where waste materials are burned, left to decompose, rust, or simply remain.

dumping: An indiscriminate method of disposing of solid waste.

dune: A mound or ridge of sand piled by wind.

dust: Particles over 1 micron in size produced by the physical breakdown of organic and inorganic substances.

"dust bowl": The loosely demarcated area of the southern Great Plains that was subject to severe wind erosion and subsequent dust storms during the mid-1930s.

dustfall jar: An open-mouthed container for collecting particulate pollutants which settle because of gravitational forces.

dystrophic lakes: Shallow lakes characterized by brown water, high organic matter content, low nutrient availability, poor bottom fauna, and high oxygen demand; oxygen is continually depleted and pH is usually low. In lake aging, the age between an eutrophic lake and a swamp.

E

earthen dam: A dam constructed of compacted soil materials.

easement: A limited right over land owned by someone else. An easement may be for a certain number of years or be perpetual in duration. An affirmative easement gives the owner of the easement the right to use the land for a stated purpose. A negative easement is an agreement with a private property owner to limit the development of his land in specific ways.

ebb tide: The period of tide between a high water and the succeeding low water; falling tide.

ecocide: Any substance that kills an entire ecosystem.

ecological backlash: An unexpected and often undesirable side effect of changing an ecosystem.

ecological equivalents: Organisms that occupy the same ecological niche (role) in different parts of the world; e.g., cattle in North America and kangaroos in Australia are both grassland grazers.

ecological factor: Any part or condition of the environment that influences the life of one or more organisms. See *biotic factor.*

ecological niche: See *niche.*

ecology: The study of interrelationships of organisms to one another and to their environment.

ecosphere (biosphere): The sum total of all the various ecosystems on the planet. The sphere of air, water, and land in which all life is found.

ecosystem: A contraction for "ecological system;" the interacting system of a biological community and its non-living environment.

ecotone: A transition strip of vegetation between two communities which has characteristics of both kinds of neighboring vegetation as well as characteristics of its own.

ecotype: A locally adapted population of a species which has a distinctive limit of tolerance to environmental factors.

edaphic factor: A condition or characteristic of the soil (chemical, physical or biological) which influences organisms.

edge (wildlife): The transitional zone where one cover type ends and another begins.

edge effect: The influence of two or more adjoining communities upon the composition and density of populations within the bordering area.

effective precipitation: That portion of total precipitation that becomes available for plant growth. It does not include precipitation lost to deep percolation below the root zone or to surface runoff.

effective soil depth: The depth of soil material that plant roots can penetrate readily to obtain water and plant nutrients; the depth to a layer that differs sufficiently from the overlying material in physical or chemical properties to prevent or seriously retard the growth of roots.

effluent: 1. Solid, liquid, or gaseous wastes that enter the environment as a by-product of man-oriented processes. 2.The discharge or outflow of water from ground or subsurface storage.

effluent seepage: Diffuse discharge onto the ground of liquids that have percolated through solid waste to another medium; they contain dissolved or suspended materials.

electrodialysis: A process that uses electrical current applied to permeable membranes to remove minerals from water; often used to densalinize salt or brackish water.

electrofishing: A technique for sampling fish populations by using electricity to temporarily stun fish so that they may be assessed as to size, species composition, etc.

electrolysis: Chemical decomposition of certain substances by an electric current passing through a substance.

electromagnetic energy (radiation): Energy propagated through space or through material media in the form of an advancing interaction between electric and magnetic fields.

electromagnetic spectrum: The ordered array of known electromagnetic radiations, extending from the shortest cosmic rays through gamma rays, x-rays, ultraviolet radiation, visible radiation, infrared radiation, and including microwave and all other wavelengths or radio energy.

electron: A fundamental particle possessing one unit of negative charge but having little mass.

electrostatic precipitator: A device for removing particulates from smokestack emissions by causing the particles to become electrostatically charged and then attracting them to an oppositely charged plate where they are precipitated out of the air.

elevation: The variation in the height of the earth's surface; the measure of vertical distance from a known datum plane which on most maps is mean sea level.

eluviation: The removal of soil material in suspension from a layer or layers of a soil.

embankment: An artificial deposit of material that is raised above the natural surface of the land and used to contain, divert, or store water; support roads or railways; or for other similar purposes.

emergency core cooling system (ECCS): A system designed to instantaneously flood the core of a nuclear reactor with large amounts of water to prevent meltdown if the core overheats.

emergency episode (pollution): An air pollution incident in a given area caused by a concentration of atmospheric pollution reacting with meteorological conditions that results in a significant increase in illnesses or deaths.

emergency spillway: A channel to carry water safely through or around dams should the primary spillway fail to function properly, or if more runoff occurs than the primary spillway was designed to carry. See *spillway*.

emigration: The movement of an organism out of a locality, usually without the probability of returning.

emission factor: The relationship between the amount of pollution produced and the amount of raw material processed.

emission inventory: A listing, by source, of the amounts of air pollutants discharged into the atmosphere of a community daily. It is used to establish emission standards.

emission standard: The maximum amount of discharge legally allowed from a single source, mobile or stationary.

endangered species (native): A species of native fish, wildlife or plant threatened with extinction because its habitat is threatened with destruction, drastic modification, or severe curtailment; or because of over-exploitation, disease, predation, or other factors. Its survival requires assistance.

endemic species: An organism or species that is restricted to a relatively small geographic area or to an unusual or rare type of habitat.

energy: The capacity to do work.

energy flow: In ecology, the one-way transfer of energy through an ecosystem; more specifically, the way in which energy is converted and expended at each trophic level.

energy (or food) pyramid: The passage of energy as food from one trophic level to another. Since about 80 to 90 percent of the energy in each transfer is lost as waste heat, the resulting shape of the energy levels is that of a pyramid.

enrichment: The process of sewage effluent or agricultural runoff adding nutrients (nitrogen, phosphorus, carbon compounds) to a water body, thereby greatly increasing the growth potential for algae and aquatic plants.

entropy: The measure of disorder or energy not available for useful work.

enumeration: In a forest, the counting of one or more species, generally above a specific size limit, and their classification by size, condition, etc.

environment: The sum total of all the external conditions that may act upon an organism or community to influence its development or existence.

environmental damage costs: Costs incurred by society as a result of pollution; benefits of pollution abatement are measured by the reduction of damage costs.

environmental impact statement: A document prepared by a federal or state agency, or a private firm, detailing the environmental impact of a proposed law, a construction project, or other major action that may significantly affect the environment. Statements are required by the National Environmental Policy Act and various state environmental laws.

environmental resistance: The sum total of environmental limiting factors which prevent the biotic potential of a species from being realized.

eolian soil material: Soil material accumulated through wind action. The most extensive areas in the United States are silty deposits (loess), but large areas of sandy deposits also occur.

ephemeral stream: A stream or portion of a stream that flows only in direct response to precipitation, receives little or no water from springs, no long-continued supply from melting snow or other sources, and its channel is at all times above the water table.

epidemiology: The study of diseases as they affect populations.

epilimnion: The water mass extending from the surface to the thermocline in a stratified body of water; the epilimnion is less dense than the lower waters and is wind-circulated and essentially homothermous. See *hypolimnion.*

epizootic: An epidemic disease in animals.

equilibrium: The condition in which a population or community is maintained with only minor fluctuations in composition over an extended period of time. Sometimes called *dynamic equilibrium.*

erodible: That which is susceptible to erosion.

erosion: 1. The wearing away of the land surface by running water, wind, ice, or other geological agents, including such processes as gravitational creep. 2. The detachment and movement of soil or rock fragments by water, wind, ice, or gravity. The following terms are used to describe different types of water erosion:

accelerated erosion: Erosion much more rapid than normal, natural (geologic) erosion, primarily as a result of the influence of the activities of man or, in some cases, of other animals or natural catastrophies (e.g., fire) that expose base surfaces.

geological erosion: The normal or natural erosion caused by geological processes acting over long geologic periods which result in the wearing away of mountains and the formation of peneplains, floodplains, coastal plains, etc. Also called *natural erosion.*

gully erosion: The erosion process whereby water accumulates in narrow channels and, over short periods, removes the soil from this narrow area to considerable depths, ranging from one to two feet to as much as 75 or 100 feet.

natural erosion: Geological erosion.

normal erosion: The gradual erosion of land used by man which does not greatly exceed natural erosion.

rill erosion: An erosion process in which numerous small channels only several inches deep are formed; it occurs mainly on recently cultivated soils. See *rill.*

sheet erosion: The removal of a fairly uniform layer of soil from the land surface by runoff water.

shore erosion: Removal of soil, sand, or rock from the land adjacent to a body of water due to wave action.

splash erosion: The spattering of small soil particles caused by the impact of raindrops on wet woils. The loosened and spattered particles may or may not be subsequently removed by surface runoff.

streambank erosion: 1Scouring of material and the cutting of channel banks by running water.

streambed erosion: Scouring of material and cutting of channel beds by running water.

erosive: That which has the force to erode (usually refers to wind or water having sufficient velocity to cause erosion).

escarpment: A steep face or a ridge of high land; the escarpment of a mountain range is generally on that side nearest the sea.

essential element: A chemical element required for the normal growth of an organism.

estuary: That portion of a coastal stream influenced by the tide of the body of water into which it flows; for example, a bay or mouth of a river where the tide meets the river current; an area where fresh and marine waters mix.

euphotic zone: The lighted region of a body of water that extends vertically from the water surface to the depth at which photosynthesis fails to occur because of insufficient light penetration. Compare *abyssal zone, bathyal zone, aphotic zone.*

eutrophication: The aging process of lakes whereby aquatic plants are abundant and waters are deficient in oxygen. The process is usually accelerated by enrichment of waters with surface runoff containing nitrogen and phosphorous.

eutrophic lakes: Lakes that are rich in nutrients and organic materials, therefore highly productive. These lakes are often shallow and seasonally deficient of oxygen in the hypolimnion. See *oligotrophic lakes.*

evaporation: The process by which a liquid is changed to a vapor or gas.

evaporation ponds: Areas where sewage sludge is dumped and allowed to dry.

evapotranspiration: The combined loss of water by evaporation from the soil surface and by transpiration by plants from a given area during a specific period of time.

even-aged: A stand of trees in which only small differences in age occur among the individuals.

evergreen: Perennial plants that are never entirely without green foliage.

excessive precipitation: A standard U.S. Weather Bureau term for "rainfall in which the rate of fall is greater than certain adopted limits, chosen with regard to the normal precipitation (excluding snow) of a given place or area." It does not mean the same as excess rainfall.

excess rainfall: Rainfall that exceeds the infiltration rate of a soil, thus causing runoff.

exfoliation: The flaking off of material in thin layers or scales; one process by which rock is disintegrated by physical and chemical forces.

exhaust emissions: The air pollutants emitted from the exhaust of the internal combustion engine, primarily carbon monoxide, nitrogen oxides, and hydrocarbons.

exotic: An organism or species that is not native to the region in which it is found.

exponential growth: Geometric growth; a plotted graph yields a J curve.

exposure: The direction of slope with respect to points of a compass.

external combustion engine: An engine (e.g., the steam engine) in which combustion occurs outside thecylinder or cylinders.

externalities: Effects on one or more persons resulting from an action by a different person or firm.

extinct species: A species of organism that has completely died out.

F

fabric filter: A cloth device that catches dust and particles from industrial emissions.

fallout: The dropping to the earth from the air of particulates, especially the radioactive dust from atomic explosions or other release.

fall overturn: See *overturn.*

fall shuffle: The autumn break up of quail family groups and the subsequent interchange and mixing of birds among groups into new units (winter coveys) that is an important factor in lessening inbreeding within family groups.

fallow: Cropland which lies idle, either tilled or untilled, during the entire or greater portion of the growing season.

family planning: The voluntary planning and taking action by individuals to have only the number of children they want, when and if they want them.

farm pond: A water impoundment made by constructing a dam or embankment, or by excavating a pit or "dug out."

fauna: The animal life of a region.

fecal coliform: A group of bacteria normally present in large numbers in the intestinal tracts of humans and other warm-blooded animals.

fecal streptococcus: A group of bacteria normally present in large numbers in the intestinal tracts of warm-blooded animals other than humans. By assessing the ratio of coliforms to streptocci in a water sample, a rough estimate can be made of the relative contribution of fecal contamination from the two mentioned possible sources.

fecundity: The biological capacity of an organism to reproduce.

feed: Harvested forage, such as hay, fodder or grain; grain products and other foodstuffs processed for feeding livestock.

feedlot: A relative small, confined land area on which a large concentration of livestock is raised.

fee fishing: A facility where impounded water is used for stocking, rearing, and harvesting of fish. The user pays a fee [illegible]ke fish.

feral: An organism that has escaped from cultivation or domestication and is existing in the wild.

fertility (soil): 1. The quality of a soil that enables it to provide nutrients in adequate amounts and in proper balance for growth of specified plants when other growth factors are favorable. 2. (population) The actual number of births occurring to a particular woman, or to a population aggregate.

fertility control: The use of techniques to control reproduction of organisms; it may include contraception, infertility treatment, abortion, and sterilization.

fertilizer: Any organic or inorganic material of natural or synthetic origin that is added to a soil to supply elements essential to plant growth.

fertilizer analysis: The percentage composition of fertilizer, expressed in terms of nitrogen (N), phosphorus pentoxide (P_2O_5), and potassium oxide (K_2O). For example, a fertilizer with a 6-12-6 analysis contains 6 percent nitrogen (N), 12 percent P_2O_5, and 6 percent K_2O. Minor elements may also be included.

fibrous root system: A plant root system having a large number of small, finely divided, widely spreading roots but no large individual roots. Typified by a grass root system. See *taproot system.*

field capacity: The amount of water retained in a soil, or in solid wastes, after it has been saturated and has drained freely.

field stripcropping: A system of stripcropping in which crops are grown in parallel strips laid out across the general slope but which do not follow the contour. Strips of grass or close-growing crops are alternated with strips of cultivated crops.

fill: 1. (geology) Any sediment deposited by any agent so as to fill or partly fill a channel, valley, sink, or other depression. 2. (solid waste management) A site where solid waste is disposed of by using sanitary landfilling techniques. 3. The material placed to complete a formation up to its required level.

filter collector: A mechanical apparatus for removing particulate matter from the atmosphere.

filter strip: A strip of permanent vegetation above farm ponds, diversion terraces, and other structures to retard flow of runoff water, causing deposition of transported material, and thereby reducing sediment flow.

filtration: A process of removing particles of solid materials from water, usually by passing it through sand.

fingerling: A small fish (especially a young fish) no longer than a finger.

firebreak (forestry): A space cleared of flammable material to stop or check creeping or running fires. It may also serve as a line from which to work and facilitate the movement of men and equipment in fire suppression. Designated roads may serve as firebreaks.

fire danger: The resultant, often expressed as a danger index, of factors which affect the inception, spread, and difficulty of control of wildfires.

fire scar: A scar on a tree where the bark and perhaps deeper layers have been damaged by fire; it may be partly or entirely covered by later-growing tissues.

fire season: The period(s) of the year during which wildfires are most likely to occur. In some areas, the periods during which any burning is subject to legal restrictions.

first bottom: On a floodplain which has more than one distinct level, the level immediate to the stream.

fishery: The place of or the specific type of fish resource available to fishermen; e.g., warm-water fishery; salmon fishery; bass fishery; trout fishery; etc.

fish hatchery: A place where fish eggs are collected and hatched; the young fish are used to stock or restock ponds, lakes and streams.

fish protein concentrate (FPC): A protein-rich powder made by converting fish to fish meal and then to a tasteless, odorless powder that can be added to fortify protein deficient foods.

fish screen: A porous barrier placed across the inlet or outlet of a pond to prevent the passage of fish.

fishway (fish ladder): A passageway designed to enable fish to ascend a dam, cataract, or velocity barrier.

fission: A process in which the nucleus of a heavy element splits into (generally) two nuclei of lighter elements, with the release of neutrons and substantial amounts of energy. The most important fissionable materials are uranium-235 and plutonium-239.

flash point: The lowest temperature at which a solid or liquid first gives off flammable vapor at a sufficient rate to produce a flash in still air on applying a small flame.

floc: A clump of solids formed in sewage by biological or chemical action.

flocculation: The process by which suspended colloidal or very fine particles are assembled into larger masses or floccules which eventually settle out of suspension.

flood: An overflow from a river or other body of water which may cause or threaten damage to adjacent land and property.

flood peak: The highest value of the stage or discharge attained by a flood, thus, peak stage or peak discharge.

flood stage: The stage at which overflow of the natural banks of a stream begins to cause damage in the reach in which the elevation is measured.

floodgate: A gate placed in a channel or closed conduit to keep out floodwater or tidal backwater.

floodplain: Contiguous level land situated on either side of a channel which is subject to overflow flooding.

floodwater retarding structure: A structure providing for temporary storage of floodwater and for its controlled release.

floodway: A channel, either natural, excavated, or bounded by dikes and levees, used to carry excessive flood flows to reduce flooding. Sometimes considered to be the transitional area between the active channel and the floodplain.

flora: The kinds of plants characteristic to an area, a period, a geological stratum, and the like.

flowmeter: An instrument to measure the rate of movement of a fluid; e.g., the speed of wastewater through a treatment plant.

flue gas: The air coming out of a chimney after combustion. It can include nitrogen oxides, carbon oxides, water vapor, sulfur oxide, particles, and many chemical pollutants.

flue gas scrubber: A type of equipment that removes fly ash and other objectionable materials from flue gas by the use of sprays, wet baffles, or other means that require water as the primary separation mechanism. It is also called a *flue gas washer.*

flume: An open conduit on a prepared grade, trestle, or bridge for the purpose of carrying water across creeks, gullies, ravines, or other obstructions. It may also apply to an entire canal that is elevated above natural ground for its entire length. The term is also sometimes used in reference to calibrated devices used to measure the flow of water in open conduits.

fluorocarbons: A gas used as a propellant in aerosols. Some persons believe it to be modifying the ozone layer in the stratosphere, thereby allowing more solar radiation to reach earth's surface.

flushing bar: A pole or rod-like attachment ahead of a mowing machine or other cutting tool to frighten birds and other animals so that they will not be injured by the machine.

fluvial: That which pertains to rivers; growing or living in streams or ponds; produced by river action, as a fluvial plain.

fly ash: Small, solid particles of residue generated when coal, oil or waste materials are burned.

flyway: A system of migration routes within a vast geographic area that connect extensive bird breeding grounds with their wintering grounds.

foliage: The green or live leaves of plants; the total mass of leaves.

food additive: A substance added to a food, usually to enhance its color, flavor, shelf life, or nutritional characteristics.

food chain: The sequence of transfers of energy in the form of food from organisms in one trophic level to those in another. There are two major branches, the grazing food chain and the detritus food chain.

food web (food cycle): All of the interconnecting food chains in a community.

forage: All browse and herbaceous food that is available to livestock or game animals; it may be used for grazing or harvested for feeding.

forage fish: Small fish which breed prolifically and serve as food for predatory fish.

forb: A herbaceous plant which is not a grass, sedge, or rush.

forest: A plant association predominantly of trees and other woody vegetation.

forest cover: All woody growth occupying the ground in a forest.

forest plantation: A stand of trees established by planting young trees or by sowing seeds.

forest type: A descriptive term used to group forest stands of similar character as to composition and development due to certain ecological factors by which they may be differentiated from other groups of stands. It suggests repetition of the same character under similar conditions.

fossil fuel: Any naturally occurring fuel of an organic nature, such as coal, oil shale, natural gas, or crude oil.

freeboard (hydraulics): The vertical distance between the maximum water surface elevation anticipated in design and the top of retaining banks or structures provided to prevent overtopping because of unforeseen conditions.

free-flowing stream: A stream, or a portion of a stream, that is unmodified by the works of man or, if modified, still retains its natural scenic qualities and recreational opportunities.

free-swimming: Actively moving about in water or capable of moving about in water.

free range: Range which is open to grazing without fee by domestic livestock regardless of land ownership (sometimes erroneously called "open range").

freshwater: Inland waters; waters that contain little or no salt.

friable: The ease of crumbling of soils.

fry: The developmental stage of fish at and immediately after hatching.

fuel rod: A metal rod containing fissionable isotopes that is inserted into the core of a nuclear reactor.

fugitive dust: Particulate matter not emitted from a duct or stack that becomes airborne due to the forces of wind or mining operations or both.

fumes: Particulate or gaseous emissions formed from the chemical reactions of condensation of cooling vapors.

fumigation: The controlled or natural exposure of vegetation to phytotoxic pollutants.

fungus (pl., fungi): A simple or complex organism without chlorophyll. The simpler forms are one-celled; the higher forms have branched filaments and complicated life cycles; e.g., molds, yeasts, and mushrooms.

fungicide: Substances or a mixture of substances intended to prevent or kill fungi.

furbearer: A mammal sought for its fur. (In Missouri, the *Wildlife Code* defines furbearers as: mink, muskrat, opossum, otter, striped skunk, spotted skunk, badger, beaver, raccoon, weasel, red fox, gray fox, bobcat, and coyote.)

furrow: A depression left in the earth's surface when the ground is turned over or moved by a plow.

fusion: The process in which the nuclei of light elements, especially hydrogen isotopes, combine to form the nucleus of a heavier element(s) with the release of substantial amounts of energy. These are called thermonuclear reactions because very high temperatures are required.

G

gabion: A rectangular or cylindrical wire mesh cage filled with rock and used as a protecting apron, revetment, etc., against erosion.

game animal: An animal sought for its fur, feathers, flesh, or trophy value, and which is considered to possess those sporting qualities that enhance the hunt or angling experience. (In Missouri, consult the *Wildlife Code* for definitions of Game Birds, Game Fish, and Game Mammals.)

game management: The art of producing sustained annual crops of wild game animals.

game refuge: An area designated for the protection of one or more species of game animals within which hunting and fishing is prohibited. *Note:* An area may be a refuge for one or more species, but be "open" for strictly controlled hunting or fishing of other species.

gamma ray: A form of radiation the same as an x-ray, but having a shorter wave length and much more energy. They are the most penetrating of the three common types of radiation (alpha, beta, and gamma), and they can be stopped only by dense materials like lead.

garbage: Animal and vegetable waste resulting from the handling, storage, sale, preparation, cooking, and serving of foods.

gas barrier: Any device or material used to divert the flow of gases produced in a sanitary landfill or by other land disposal techniques.

gaseous cycle: A biogeochemical cycle with the atmosphere as the primary reservoir. Examples include the oxygen and nitrogen cycles.

gasification: The conversion of a solid material, such as coal, into a gas for use as fuel.

gasohol: A mixture of gasoline and alcohol used as a substitute for gasoline in the United States; gasohol is generally a mixture of 10 percent ethanol and 90 percent unleaded gasoline.

geiger counter: An electrical device that detects the presence of radioactivity.

general fertility rate: The number of live births in one year per 1,000 females of childbearing age (in U.S. defined as ages 15-44).

generator: A device that converts mechanical energy into electrical energy.

genetic damage: The damage by radiation or chemicals to reproductive cells by producing mutations that can be passed on to future generations in the form of fetal and infant deaths, and physical and mental deformities.

gene pool: The total genetic information possessed by a given reproducing population.

geometric growth: The growth which results by repeated multiplication by a constant; a plotted graph yields a J curve.

geothermal energy: The energy derived from the heat of the earth's interior.

germicide: Any compound that kills disease-carrying microorganisms.

girdling: The encircling of the trunk of a tree with a continuous series of cuts deep enough to kill the tree.

glacial drift: The rock debris transported by glaciers and deposited either directly from the ice or from the meltwater. The debris may or may not be heterogenous.

glasphalt: A type of road surfacing material in which crushed glass is used rather than sand in its manufacturing.

glassification: A method of treating radioactive waste by concentrating it and enclosing it in solid ceramic bricks.

grade: The slope of a road, channel, or natural ground.

graded stream: A stream in which, over a period of years, the slope is delicately adjusted to provide, with available discharge and with prevailing channel characteristics, just the velocity required for transportation of the load (of sediment) supplied from the drainage basin. The graded profile is a slope of transportation.

grade stabilization structure: A structure for the purpose of stabilizing the grade of a gully or other water course, thereby preventing further head-cutting or lowering of the channel guide.

gradient: A change of elevation, velocity, pressure or other characteristics per unit of length; slope.

grain (wood): The direction, size, arrangement, appearance or quality of fibers in wood.

grass: A member of the botanical family Gramineae, characterized by bladelike leaves arranged on the culm or stem in two ranks.

grassed waterways: A natural or constructed waterway, usually broad and shallow, covered with erosion-resistant grasses, used to conduct surface water from cropland.

grassland: Land on which the existing plant cover is dominated by grasses. See *prairie.*

gravitational water: The water that moves into, through, or out of the soil under the influence of gravity.

grazing: The eating of any kind of standing vegetation, except browse, by domestic livestock or wild animals.

grazing capacity: The maximum stocking rate possible without inducing damage to vegetation or related resources.

grazing land: Land used regularly for grazing. The term is not confined to land suitable only for grazing. Cropland and pasture used in connection with a system of farm crop rotation are usually not included.

grazing permit: A document authorizing the use of public or other lands for grazing purposes under specified conditions; the permit is issued to the livestock operator by the agency administering the lands.

grazing preference: The selection of certain plants over others by grazing animals.

grazing season: The portion of the year that livestock graze, or are permitted to graze, on a given range or pasture. It is sometimes called grazing period.

grazing unit: An area of rangeland or pastureland, public or private, that is grazed as an entity.

greenbelt: A strip of land kept in its natural or relatively undeveloped state, or in agricultural use, which serves to break up the continuous pattern of urban development; such is frequently planned around the periphery of urban settlements.

green browse: Herbaceous plants which are planted specifically for grazing (or browsing) by wildlife, especially geese.

greenhouse effect: The warming of earth's atmosphere by the build-up of carbon dioxide which allows light from the sun's rays to heat the earth, but which inhibits loss of the heat.

greentree impoundment: An artificial, temporary swamp created by flooding live trees for the purpose of waterfowl management.

green manure crop: Any crop grown for the purpose of being turned under while still green, or soon after maturity, for soil improvement.

green revolution: A popular term for the greatly increased yield per acre when new, scientifically bred, or selected varieties of a food crop are introduced.

ground cover: Grasses or other plants grown to keep soil from being blown or washed away.

ground fire: A fire that burns the organic material in the soil layer and often also the surface litter and small vegetation.

groundwater: The subsurface water in the zone of saturation.

groundwater runoff: That part of the groundwater that is discharged into a stream channel as spring or seepage water.

growing season: The number of days between the last freeze in the spring and the first frost in the fall for the freeze threshold temperature of the crop (or other designated temperature threshold).

growing stock (forestry): The sum, by number or volume, of all the trees in a forest or a specified part of it.

growth rate: An increase or decrease in a population (expressed as a percentage of the original population) during a time period (usually a year) as determined by natural increase or decrease and net migration.

grubbing: The act of removing roots, either woody or herbaceous, by man or animal.

gully: A channel or miniature valley cut by concentrated runoff, but through which water commonly flows only during and immediately after heavy rains or during the melting of snow; it may be either dendritic (branching) or linear (rather long, narrow, and of uniform width). The distinction between a gully and rill is one of depth. A gully is sufficiently deep so that it would not be obliterated by normal tillage operations; a rill is of lesser depth and would be smoothed by ordinary farm tillage.

H

habitat: The environment in which the life needs of an organism, population, or community are supplied.

half-life: The length of time taken for half the atoms in any amount of a radioactive substance to decay (for that amount to lose half its radioactivity). The definition has been extended to refer to biological half-life or the length of time it takes for half of any substance in a biological system (such as mercury in the brain) to be broken down or excreted.

hammermill: A high-speed machine that uses hammers and cutters to crush, grind, chip or shred solid wastes.

hardiness: The adaptation of a plant or other organisms to the rigors of a climate, particularly to the occurrence of freezing, although conditions of moisture, extreme heat, etc., may influence the ability of a plant to survive.

hardness: A condition of water, caused by dissolved salts of calcium, magnesium and iron (such as bicarbonates, carbonates, sulfates, chlorides and nitrates).

hardpan: A hardened soil layer in the lower A or in the B horizon caused by cementation of soil particles with organic matter or with materials such as silica, sesquioxides, or calcium carbonate. The hardness does not change appreciably with changes in the moisture content. See *claypan.*

hardwoods: A term applied to one of the botanical group of trees that have broad leaves, in contrast to the conifers; also wood produced by trees of this group regardless of texture.

harvest: The gathering or taking of a crop of any kind. (That portion of gross production which exceeds the amount or number needed for reproduction during the subsequent production period is available for consumption.)

harvest cutting (forestry): The removal of a crop or stand of financially or physically mature trees as a final cut in even-aged management, or the removal of mature trees in uneven-age management. One of the major objectives is to encourage regeneration.

harvest rate: The relationship between the weight, volume, or number of a harvested crop to a specified unit, usually of time. *Note:* The term "catch rate" is commonly applied to the harvest rate of fish.

harvestable surplus: The number of wild animals which may be taken from a discrete population without reducing the capability of that population to restore itself within one generation or within one year, whichever is longer, to the population level existing before the surplus was harvested.

hay: The dried stems and leafy parts of plants cut and harvested by man, such as alfalfa, clovers, other forage legumes and the finer stemmed, leafy grasses.

hayland: Land used primarily for the production of hay from long-term stands of adapted forage plants.

hazardous air pollutant: Any substance in the air which may cause or contribute to illness or death.

hazardous waste: Any waste materials which by their nature are inherently dangerous to handle or dispose of, such as old explosives, radioactive materials, some chemicals, and some biological wastes; such waste is usually produced in industrial operations.

head: The height of water above any plane of reference.

headwater: 1. The source of a stream. 2. The water upstream from a structure or point on a stream.

heartwood: The inner core or layers of a woody stem, made up wholly of nonliving cells, and usually differentiated from the outer enveloping layer (sapwood) by its darker color.

heat island effect: The phenomenon of warm air in the center of a city rising as the air disperses; it then cools and sinks at the extremities. In time the cooler air from the edges of the city flows into the center to repeat a self-contained circulatory pattern.

heaving: The partial lifting of plants from the ground, frequently breaking their roots, as a result of freezing and thawing of the surface soil during the winter.

heavy metals: A group of metallic elements with relatively high atomic weights that may pose long-term environmental hazards. They include mercury, iron, cobalt, cadmium, lead, nickel, zinc, and a number of others.

hedgerow: A barrier of bushes, shrubs, or small trees growing close together in a line.

heel-in: The procedure of storing young trees or other plants in a temporary trench and covering the roots with soil to keep them from drying out before they are permanently planted.

herb: Any flowering plant except those developing persistent woody bases and stems above ground.

herbicide: A chemical substance intended to kill or inhibit the growth of plants, especially weeds.

herbivore: A plant-eating animal.

herd: A group of animals, especially cattle or big game, collectively considered as a unit.

heterogeneous: Differing in kind; having unlike qualities; possessed of different characteristics; opposed to *homogeneous.*

heterogeneous waste: A body of waste material made up of dissimilar components; e.g., municipal refuse, which contains metals, glass, paper, plastics, food wastes, yard wastes.

heterotroph: An organism that cannot produce its own food but lives on other organisms, including autotrophs. All animals, and some plants, are heterotrophs.

heterotrophic: Pertaining to organisms that are dependent on organic material for food.

hibernation: A state of winter dormancy among certain organisms, especially animals, associated with reduced respiration and other physiological functions.

high grading: A forest cutting practice by which only the best and most valuable trees are continually cut while culls and undesirable species are left.

hi-volume sampler: A device used to measure and analyze suspended particulate pollution.

holding pond: A pond or reservoir, usually made of earth, built to store polluted runoff.

holding tank: A prefabricated structure of concrete, steel, or like materials constructed to store liquid manure or other liquid wastes.

home range: The total area traversed by a wild animal engaged in feeding, breeding, loafing, and seeking refuge during its life cycle.

homogeneous: That which is of the same kind or nature; consisting of similar parts or of elements or a like nature; opposed to *heterogeneous*.

homogeneous waste: A body of waste material made up of similar components; e.g., some industrial wastes or segregated materials.

hood inlet: Entrance to a closed conduit that has been shaped to induce full flow at minimum water surface elevation.

host: An organism that supplies the life needs of another organism of a different species.

hot: A slang term for radioactive material.

hot spot: A particularly active part of a fire.

humid: Regions or climates where moisture, when distributed normally throughout the year, should not be a limiting factor in the production of most crops. The lower limit of precipitation under cool climates may be as little as 20 inches annually. In hot climates, it may be as much as 60 inches. Natural vegetation is generally forest. See *subhumid*.

hummock: A small mound. (Often referred to as an indicator of erosion when the soil has eroded from between individual plants, leaving the plants on small mounds.)

humus: That more or less stable fraction of the soil organic matter, usually amorphous and dark-colored, remaining after the major portion of added plant and animal residues have decomposed.

humus layer: The top portion of the soil which owes its characteristic features to the humus contained in it.

hunter-hour: A rough unit of measurement of the hunting pressure on an area; e.g., one hour of hunting by two hunters, or two hours of hunting by one hunter, is two hunter-hours.

hunting: The pursuit of game animals for the purpose of, and with the means for, capturing or killing them. Types (purposes for) of hunting include subsistence, sport, market, trophy, etc.

hunting pressure: The intensity of hunting as measured by hunter-hours, hunter-days, or other similar units upon a given area.

hybrid: An organism resulting from a cross between parents of different species, subspecies, or cultivar.

hybridization: The process of producing offspring by effecting a union between a male and female organism of different species, varieties, races, etc.

hydrocarbons: Compounds containing hydrogen and carbon that are subdivided into alicyclic, aliphatic, and aromatic groups based on their chemical activity and atomic structure.

hydroelectric power: Electric power generated by turbines using water flow.

hydrologic balance: The relationship between the quality and quantity of water inflow to, water outflow from, and water storage in a hydrologic unit such as a drainage basin, aquifer, soil zone, lake, or reservoir; it encompasses the dynamic relationships among precipitation, runoff, evaporation, and changes in ground and surface water storage.

hydrologic condition: The runoff potential of a particular cropping practice; a crop under good hydrologic condition will have a higher infiltration rate and lower runoff potential than one under poor conditions.

hydrologic cycle: The circuit of water movement from the ocean through the atmosphere to the earth and return to the ocean through various stages or processes of precipitation, interception, runoff, infiltration, percolation, storage, evaporation, and transpiration.

hydrology: The science dealing with the properties, distribution, and circulation of water and snow.

hydrolysis: The reaction of a salt with water to produce a basic or acidic solution.

hydrophyte: A plant that grows in water or in wet or saturated soils. See *xerophyte, mesophyte*.

hydroponics: The growing of plants in a liquid solution which contains the necessary minerals used as food by the plants.

hydrosphere: The water portion of the earth (including water vapor in the air), as distinguished from the solid, gaseous, and living parts.

hygroscopic water: Water so tightly held by the attraction of soil particles that it cannot be removed except as a vapor by raising the temperature above the boiling point of water. It is unavailable to plants.

hypolimnion: The region of a body of water that extends from the thermocline to the bottom and is essentially removed from major surface influences. See *epilimnion*.

I

igneous rock: Rock formed by solidification from a molten or partially molten state; primary rock.

illuvial horizon: A soil layer or horizon in which material carried from an overlying layer has been precipitated from solution or deposited from suspension.

illuviation: The process of deposition of soil material removed from one horizon to another in the soil, usually from an upper to a lower horizon in the soil profile.

immature soil: A soil which has not developed clear soil horizons because of insufficient time since its deposition or exposure to soil-building forces.

immature (wildife): Animals that are less than breeding age but externally resemble adults.

immigration: The movement of an organism into an area.

impedance: The rate at which a substance absorbs and transmits sound.

impervious soil: A soil through which water, air, or roots cannot penetrate. No soil is completely impervious to water and air all of the time.

impoundment: Generally, an artificial collection or storage of water, as a reservoir, pit, dugout, or sump. See *reservoir*.

improvement cutting (forestry): An intermediate cutting made in an immature stand to harvest a usable product and to improve the stand's composition and character by removing undesirable species and trees of poor form and condition.

incendiary fire: A fire unlawfully and maliciously set.

incineration: The disposal of solid, liquid, or gaseous wastes by burning.

incinerator: A controlled chamber where waste substances are burned.

increaser plant species (increasers): Plant species of the original plant community that generally increase in relative amounts, at least for a time, under continued use. The particular species will vary due to range site, kind of site, kind of grazing animals, season of use, and other environmental influences.

increment (forestry): The increase in diameter, basal area, height, volume, quality, or value of a tree or stand during a given period.

increment borer: An auger-like instrument, having a hollow bit and an extractor, that is used to extract thin radial cylinders of wood (cores) from trees to determine their rate of growth, or their age; it may also be used to determine the depth of preservative penetration in wood preservation processes.

indicator: An organism, species, or community that shows the presence of certain environmental conditions.

indicator plant: Any plant that by its presence, its frequency, or its vigor indicates any particular property of the site (especially of the soil).

indigenous: An organism born, growing, or produced naturally in a region or country; native.

indirect toxicity: Toxicity that affects organisms by interfering with their food supply or modifying their habitat rather than acting directly on the organisms themselves. See *direct toxicity.*

indurant: A term applied to rocks hardened by heat, pressure, or cementation. See *lithification.*

industrial park: A tract of land, the control and administration of which are vested in a single body, that is deemed suitable for industrial use because of location, topography, zoning, availability of utilities, and accessibility to transportation.

industrial waste: Those waste materials generally discarded from industrial operations or derived from manufacturing processes. See *waste.*

inert gas: A gas or vapor that under ordinary conditions does not react with other substances.

inertial separator: A type of air pollution control equipment that uses the principle of inertia to remove particulate matter from a stream of air or gas.

infant mortality rate: The ratio of infant deaths in a given year to live births in the same year. ("Infant" refers to a child less than one year old.)

infestation: A troublesome condition caused by the number or frequency of something that is undesirable; e.g., insects, weeds, or pathogens.

infiltration: The gradual downward flow of water from the surface through soil to ground water and water table reservoirs.

infiltration rate: A soil characteristic determining or describing the maximum rate at which water can enter the soil under specified conditions, including the presence of an excess of water.

infiltration velocity: The actual rate at which water is entering the soil at any given time. It may be less than the maximum (the infiltration rate) because of a limited supply of water (rainfall or irrigation).

influent water: Water that flows into sink holes, open cavities, and porous materials and disappears into the ground.

inlet (hydraulics): The upstream end of any structure through which water may flow.

inoculation: 1. The process of introducing pure or mixed cultures of microorganisms into natural or artificial culture media. 2. The addition of nitrogen-fixing bacteria to legume seed or to the soil in which the seed is to be planted.

inoculum: Microorganisms placed in a culture medium, soil, compost, etc.

inorganic: All chemical compounds in nature, except the compounds of carbon, but including the carbonates.

inorganic fertilizer: Any synthetic plant nutrients produced by man; e.g., ammonium sulfate or calcium nitrate. See *organic fertilizer.*

in-plant waste: Waste generated in the manufacturing process that might be recovered through internal recycling or through a salvage dealer.

insecticide: A chemical substance or a mixture of substances intended to kill insects.

insectivore: An insect-eating animal.

in situ: In place. Rocks, soil, fossils that are situated in the place where they were originally formed or deposited.

institutional waste: Waste material originating in schools, hospitals, research institutions, and public buildings. The materials include packaging materials, certain hazardous wastes, food wastes, disposable products, etc. See *waste.*

intake: 1. The headworks of a conduit; the place of diversion. 2. The entry of water into soil.

integrated pest management: The practice of combining the best of all available techniques—biological, chemical, cultural, physical, and mechanical—into a custom-made pest control system.

intensive cropping: The maximum use of land by means of a frequent succession of harvested crops.

interaction: The mutual or reciprocal action or influence between organisms, between organisms and environment, or between environmental factors.

interception (hydraulics): The process by which precipitation is caught and held by foliage, twigs, and branches of trees, shrubs, and other vegetation. (Often used for "interception loss" or the amount of water evaporated from the precipitation intercepted.)

interception channel: A channel excavated at the top of earth cuts, at the foot of slopes, or at other critical places to intercept surface flow; also called an *interception ditch.*

interceptor drain: A surface or subsurface drain, or a combination of both, designed and installed to intercept flowing water.

interceptor sewers: The collection system that connects main and trunk sewers with the wastewater treatment plant.

interflow: That portion of rainfall that infiltrates into the soil and moves laterally through the upper soil horizons until intercepted by a stream channel or until it returns to the surface at some point downslope from its point of infiltration.

intermittent grazing: A practice of alternately grazing and resting a pasture or range for variable periods of time. See *rotation grazing.*

intermittent stream: A stream, or portion of a stream, that flows only in direct response to precipitation. It receives little or no water from springs and no long-continued supply from melting snow or other sources. It is dry for a large part of the year, ordinarily for more than three months.

internal combustion engine: A type of engine that uses a series of explosions within cylinders to drive pistons.

internal soil drainage: The downward movement of water through the soil profile The rate of movement is determined by the texture, structure, and other characteristics of the soil profile and underlying layers and by the height of the water table, either permanent or perched. Relative terms for expressing internal drainage are none, very slow, medium, rapid, and very rapid.

interplanting: 1. In cropland, the planting of several crops together on the same land, for example, the planting of beans with corn. 2. In orchards, the planting of farm crops among the trees, especially while the trees are too small to occupy the land completely. 3. (forestry) The planting of young trees among existing trees or brushy growth. See *spot planting.*

interseeding: The practice of seeding into an established vegetation.

interspersion (wildlife): The distribution of heterogenous cover types and plant species in a limited area.

interstate waters: Defined by legislation as (1) waters that flow across or form a part of state or international boundaries; (2) the Great Lakes, and (3) coastal waters.

invader plant species (invaders): Plant species that were absent in undisturbed portions of the original plant community, but will invade under disturbance or continued overuse.

invasion: The migration and establishment of organisms from one area into another area.

inversion: The state of the atmosphere during which a layer of cold air is trapped near the earth's surface by an overlaying layer of warm air; this condition may contribute to air pollution.

inversity: A tendency for animal reproduction and survival rates in favorable habitats to be higher under low breeding population densities and to be lower under high breeding population densities (within breeding density limits of the species).

invertebrates: Animals without an internal skeletal structure; e.g., insects, mollusks, and crayfish. See *vertebrate*.

ion: An atom, or group of atoms, which has become electrically charged either by loss or by gain of one or more electrons

ionization: The process by which atoms are electrically charged either through the addition or loss of extranuclear electrons.

irrigation: The application of water to lands for agricultural purposes. Different systems include: center-pivot; drip; furrow; gravity; gravity sprinkler; rotation; sprinkler; subirrigation; supplemental; surface.

irrigation canal: A permanent channel or ditch constructed to convey water from the source of supply to one or more farms.

irrigation district: A cooperative, self-governing public corporation organized to obtain and distribute water for irrigation of lands within definite geographic boundaries. It is created as a subdivision of the state under authority of the state legislature with the consent of a designated fraction of the landowners or citizens; it has taxing power.

irrigation lateral: A branch of a main canal conveying water to a farm ditch; the term is sometimes used in reference to farm ditches.

irrigation structure: Any structure or device necessary for the proper conveyance, control, measurement, or application of irrigation water.

island: A mass of land surrounded by water.

isotope: A variation of an element that has the same atomic number, but a different weight because of its neutrons. Isotopes of an element may have different radioactive behavior.

J

J curve: A curve with the shape of the letter J that depicts exponential or geometric growth (1, 2, 4, 8, 16, 32,...). It is characteristic of unchecked population increase.

jetty: A structure built of piles, rocks, or other material extending into a stream, or into the sea, to induce scouring or bank building, or for protection.

junk: Unprocessed waste materials suitable for reuse or recycling.

juvenile: An animal too young to breed; distinguishable from breeding adults in external characteristics.

juvenile hormone: A chemical that controls the ability of an insect to pass through its life stages. Some are being used as pesticides.

K

karst: A type of topography characterized by closed depressions, sinkholes, underground caverns, and solution channels.

key grazing area: That portion of a pasture or grazing unit that, because of its nature, location, and the pattern of grazing use, will indicate the grazing use of the entire area.

key management species: 1. Those forage species whose use serves as an indicator of the degree of use of associated species. 2. Those species on which management of a specific unit is based.

key terrace: A staked terrace line that is selected as a reference for laying out other terraces.

key utilization species: Those species whose use indicates the degree of use of key grazing areas.

L

lacustrine: That which is pertaining to lakes.

lagoon: 1. (geology) A shallow sound, channel, pond, or lake connected with the sea. 2. (sewage treatment) A reservoir or pond built to contain water and animal wastes until they can be decomposed either by aerobic or anaerobic action.

lake: An inland body of standing water, usually thought of as being of considerable size.

land: The surface and near surface of the solid portion of the earth; inland bodies of water may also be included.

land capability: The suitability of land for use without permanent damage.

land capability class: Any one of the eight classes of land in the land capability classification of the Soil Conservation Service; each is classified according to the risk of land damage or the difficulty of land use.

land capability map: A map that shows land capability units, subclasses, and classes, or a soil survey map colored to show land capability classes.

land classification: The arrangement of land units into various categories based on the properties of the land or its suitability for some particular purpose.

landform: A discernible natural landscape that exists as a result of geological activity; e.g., a plateau, a plain, a mountain, etc.

land leveling: The process of shaping the land surface for better movement of water and machinery over the land. The process may also be called *land forming, land shaping,* or *land grading.*

land reclamation: The process of making land capable of more intensive use by changing its general character, as by drainage of excessively wet land; irrigation of arid or semiarid land; or recovery of submerged land from seas, lakes, and rivers.

land resting: The temporary discontinuance of cultivation of a piece of land. See *fallow.*

landscape: All the natural features, such as fields, hills, forests, and water that distinguish one part of the earth's surface from another part; usually that portion of land or territory which the eye can comprehend in a single view, including all of its natural characteristics.

landslide: 1. A mass of material that has slipped downhill under the influence of gravity, frequently occurring when the material is saturated with water. 2. The rapid movement down slope of a mass of soil, rock, or debris.

land use: The primary or primary and secondary use(s) of land, such as cropland, woodland, pastureland, etc.

land use plan: A composite of information, ideas, policies, programs, and activities related to existing and potential uses of land within a given area; such describes the recommended location and intensity of development for both public and private land uses such as residential, commercial, industrial, recreational, and agricultural.

larva: The immature form of an animal, usually an insect, that must pass through metamorphosis before reaching its adult form.

larvicide: A chemical substance, or a mixture of substances, intended to kill insects in their larval stage.

latitude: The angular measurement in degrees north or south of the equator. Lines denoting latitude are also called parallels. (One minute of arc of meridian is one nautical mile.)

law of diminishing returns: A condition reached in which, when other factors in production do not change, further increases in the input of one factor will not yield proportionate increases in production; e.g., fertilizer can be used so heavily that additional applications will give little or no increase in yield.

law of minimum (Liebig's Law): The growth and reproduction of an organism is dependent on the nutrient substance (such as oxygen, carbon dioxide, calcium, and others) that is available in minimum quantity. See *limiting factor.*

law of supply and demand: The quantity of a commodity that will be produced or offered for sale (supply) varies directly with the price. The quantity of a commodity that potential buyers are willing to take (demand) varies inversely with the price. The greater the amount of a given product offered for sale on a given market at a given time, the lower the price per unit at which the entire amount can be sold.

law of tolerance (Shelford's Law): When one environmental factor approaches the limits of tolerance, either minimum or maximum, that factor will become the controlling one and determine whether or not a species is able to maintain itself.

LC_{50}: The median lethal concentration, a standard measure of toxicity. It tells how much of a substance is needed to kill half of a group of experimental organisms.

leachates: The liquids that have percolated through a soil and that contain substances in solution or suspension.

leached soil: A soil from which most of the soluble materials have been removed from the entire profile, or from one part of the profile, and have accumulated in another part.

leaching: The process by which nutrient chemicals or contaminants are dissolved and carried away by water, or are moved into a lower layer of soil.

leaching field: The area used for disposal of liquid through a nonwater-tight artificial structure, conduit, or porous material by downward or lateral drainage, or both, into the surrounding permeable soil.

leaching requirement (leaching fraction): The fraction of excess water from irrigation or rainfall passing through the soil to prevent salt accumulation in the root zone.

leader: The main shoot growing from the top of a tree with a single main trunk.

lead poisoning: An illness produced by the absorption of the element lead into the system; often used in reference to the condition in waterfowl that results from the ingestion of lead shot.

leaf mold: A substance formed by decayed and partially decayed leaves, found on the surface of some forested areas, or produced by composting leaves.

legume: A member of the pulse family, one of the most important and widely distributed plant families. Legumes include many valuable food and forage species, such as peas, beans, peanuts, clovers, alfalfas, sweet clovers, lespedezas, vetches, and kudzu. Practically all legumes are nitrogen-fixing plants.

length-frequency: The frequency of occurrence of a given length of organism; e.g., fish, in a sample of a population.

lentic: That which pertains to standing (nonflowing) waters such as lakes, ponds and swamps. See *lotic.*

levee: An embankment to confine or control water, especially one built along the banks of a river to prevent overflow of adjacent lowlands; a dike.

life cycle: The stages through which an organism passes during its existence.

life expectancy: Under given mortality conditions (age-specified death rates), the average number of years of life remaining to males or females of a specified age.

lift: A compacted layer of solid waste and the top layer of cover material in a sanitary landfill.

light-water reactor: A nuclear reactor in which ordinary water or light water is the primary coolant/moderator with slightly enriched uranium fuel. There are two commercial light-water reactor types—the boiling water reactor and the pressurized water reactor.

lignin: The noncarbohydrate, organic, structural constituent of woody fibers in plant tissues that, along with cellulose, encrusts the cell walls and cements the cells together, providing strength.

lime: From the strictly chemical standpoint, lime refers to only one compound—calcium oxide (CaO); the term is commonly used in agriculture, however, to include a great variety of materials that are usually composed of the oxide, hydroxide, or carbonate of calcium, or of calcium and magnesium. Lime is added to soil to furnish calcium and magnesium as essential elements for the growth of plants and to neutralize soil acidity. The most commonly used forms of agricultural lime are ground limestone (carbonate), hydrated lime (hydroxides), burnt lime (oxides), marl, and oyster shells.

limestone: A sedimentary rock composed of calcium carbonate ($CaCO_3$); there are many impure varieties.

limit: The maximum number or quantity, and/or total length, of any wildlife which may legally be taken or possessed by any person within a specified period of time.

limiting factor: A factor whose absence, deficiency, or excessive concentration exerts some restraining influence upon a population through incompatibility with species requirements or tolerance. See *law of minimum (Liebig's Law), law of tolerance (Shelford's Law).*

limnetic zone: The open-water region of a lake, especially those areas too deep to support rooted aquatic plants; this zone suports plankton and fish as the principal plants and animals. See *littoral zone.*

limnology: The study of the biological, chemical, geographical, and physical features of fresh waters.

line-intercept method: The sampling of vegetation by recording the plants intercepted by a measured line set close to the ground or by vertical projection from the line.

liquefaction: The changing of a solid into a liquid form, especially by heat.

liquid fertilizers: A fluid in which the plant nutrients are in true solution.

liquid waste: A general term denoting pollutants such as soap, chemicals, or other substances in liquid form.

lithification: The process of converting a sedimentary deposit into an indurated rock. See *indurate.*

lithosphere: The crust of the earth.

litter: 1. (forestry) A surface layer of loose organic debris in forests, consisting of freshly fallen or slightly decomposed organic materials. 2. (waste) That highly visible portion of solid waste that is discarded outside of the regular disposal systems (litter accounts for about two percent of the total solid waste volume).

littoral: That which pertains to a shore, especially a seashore; more specifically, the zone of the seafloor lying between tide levels.

livestock: Domestic animals produced or kept primarily for farm, ranch, or market purposes; livestock includes beef and dairy cattle, hogs, sheep, goats, and horses.

livestock pond: An impoundment, the principal purpose of which is to supply water to livestock; includes reservoirs, pits, and tanks.

living fence: A fence of growing plants such as multiflora rose or Osage orange.

loess: The predominantly silt-sized particles of material transported and deposited by wind.

longitude: At the pole, the angle between the meridian of the place and some standard meridian. For American maps, the standard meridian is the one passing through Greenwich, England.

lookout: A person employed to detect and report forest fires from a vantage point. (If stationed in a lookout tower, often called a "towerman.")

loose rock dam: A dam built of rock without the use of mortar; a rubble dam. See *rock-fill dam*.

lotic: That which pertains to flowing waters such as streams and rivers. See *lentic*.

M

macronutrient: A chemical needed in a relatively large quantity to sustain life in an organism. Phosporous, nitrogen, potassium, calcium, and oxygen are examples.

macroorganisms: Those organisms retained on a U.S. standard sieve No. 30 (openings of 0.389 mm); those organisms visible to the unaided eye. See *microorganisms*.

macrophyte: Any plant that can be seen with the unaided eye.

magma: The molten rock material beneath the earth's surface.

magnetohydrodynamics (MHD): An energy conversion technique that generates electricity directly from high-temperature ionized gases passed through a magnetic field.

malnutrition: A state of poor health in which an organism's diet lacks one or more essential vitamins and nutrients, especially proteins. Compare *undernutrition*.

Malthusian theory of population: A theory (first published by Thomas Malthus) that population tends to increase as a geometric progression while food tends to increase as an arithmetic progression. The conclusion is that human beings are therefore destined to misery and poverty unless population growth is controlled.

manure: The excreta of animals, with or without the admixture of bedding or litter, in varying stages of decomposition.

marginal land: Land that provides economic returns barely sufficient to meet expenses in a specific use. See *submarginal land*.

mariculture: The deliberate cultivation of fish and shellfish in estuarine and coastal areas.

marine: That which pertains to the sea.

marking trees: The selection and indication, usually by blaze or paint spot, of trees to be cut (or retained) in a cutting operation.

marsh: A periodically wet, or continually flooded, area where the surface is not deeply submerged; it is covered dominantly with sedges, cattails, rushes, or other hydrophytic plants.

masonry dam: A dam built of rock and mortar.

mast: Plant fruit, such as acorns, beechnuts, walnuts, and conifer seeds, in a collective sense, especially when used as food by animals.

meadow: An area of natural or planted vegetation, dominated by grasses and grasslike plants, used primarily for hay production.

meander: The turn of a stream, either live or cut off.

mechanical practices: Any soil and water conservation practices that primarily change the surface of the land or that store, convey, regulate, or dispose of runoff water without excessive erosion.

mechanical turbulence: The erratic movement of air caused by local obstructions such as buildings.

megalopolis: A very large continuous urban area or city belt formed by the joining, or near joining, of a number of cities.

megascopic: That which is large enough to be distinguished by the naked eye or without the aid of a microscope.

meridian: A true north and south line.

meromixis: A condition of permanent stratification of water masses in lakes.

mesophyte: A plant that grows under intermediate moisture conditions. See *hydrophyte, xerophyte.*

metabolism: The sum of all chemical processes occurring within an organism, including both synthesis (anabolism) and breakdown (catabolism) of organic compounds.

metamorphic rock: Rock derived from pre-existing rocks but that differ from them in physical, chemical and mineralogical properties as a result of natural geological processes, principally heat and pressure, originating within the earth. The pre-existing rocks may have been igneous, sedimentary, or another form of metamorphic rock.

metamorphosis: The transformation of an animal from one distinctive life history stage to another in its post-embryonic development; e.g., larva of an insect to a pupa. See *life cycle.*

methane (CH_4): An odorless, colorless, and asphyxiating gas that can explode under certain circumstances; it can be produced by solid waste undergoing anaerobic decomposition.

microclimate: The climatic condition of a small area resulting from the modification of the general aerobic decomposition.

microenvironment (microhabitat): A small environment (habitat) within a larger one in which conditions differ from those in the larger surrounding area.

micronutrient: A chemical element necessary in only extremely small amounts (usually less than one part per million) in an organism. "Micro" refers to the amount used rather than to its essentiality. Examples are boron, chlorine, copper, iron, manganese, and zinc. See *macronutrient.*

microorganism: Generally, any living thing of microscopic size, including bacteria, yeasts, simple fungi, some algae, slime molds, and Protozoa.

microrelief: Small-scale local differences in topography—including mounds, swales, or pits—that are only a few feet in diameter and with elevation differences of less than six feet.

migratory wildlife: Birds and some other animals which move in a regular pattern generally with the seasons, from one place to another for food, shelter, and breeding or nesting.

milled refuse: Solid waste that has been mechanically reduced in size.

milt: The sperm of fishes.

mine drainage: The water pumped or flowing from a mine.

mine dumps: Areas covered with overburden and other waste materials from ore and coal mines, quarries, and smelters; they usually have little or no vegetative cover.

mined land: Land with new surface characteristics due to the removal of a mineable commodity.

mineral: A natural inorganic substance that possesses a definite chemical composition and definite physical and chemical properties.

mineral soil: A soil consisting predominantly of, and having its properties determined predominantly by, mineral matter (usually containing less than 20 percent organic matter but sometimes containing an organic surface layer up to 30 centimeters thick). See *organic soil.*

mineralization: The conversion of an element from an organic form to an inorganic state as a result of microbial decomposition.

minimum tillage: The minimum amount of soil manipulation required to create the proper soil condition for seed germination and plant establishment.

mining: The process of obtaining useful minerals from the earth's crust; it includes both underground excavations and surface workings. Types of mining include: area, auger, contour surface, hydraulic, open-pit, surface, and underground.

minnow: A fish which is a member of the minnow family *Cyprinidae.* (The term is sometimes loosely applied to any small fish.)

mist: Liquid particles, measuring 500 to 40 microns, that are formed by condensation of vapor. (By comparison, fog particles are smaller than 40 microns.)

mixed fertilizers: Two or more fertilizer materials mixed or granulated together; they include dry mixed powders, granulates (bulk blends), granulated mixtures, and clear liquid mixed fertilizers, suspensions, and slurries.

mixed forest: A forest composed of two or more species of trees. In practice, the term usually refers to a forest in which at least 20 percent of the trees are other than the dominant species. See *pure forest.*

mixed liquor: The activated sludge and water containing organic matter being treated in an aeration tank.

mixed paper: Waste paper of various kinds and quality, usually collected from stores, offices, and schools.

mixing depth: An area in which rising air from the earth's surface mixes with the atmosphere above it until a layer equal or warmer in temperature is reached.

mobile source: A moving producer of air pollution, usually a form of transportation—car, motorcycle, plane.

mobility: The capability of an organism or population to move about within an area.

molecule: The smallest part of a substance that can exist separately and still retain its chemical properties and characteristic composition; the smallest combination of atoms that will form a given chemical compound.

monitoring: The periodic or continuous sampling to determine the level of pollution or radioactivity.

monoculture: The raising of crops of a single species, generally even-aged.

morbidity: The frequency of disease and illness in a population.

mortality: Deaths as a component of population change.

muck: Highly decomposed organic material in which the original plant parts are not recognizable. Muck contains more mineral matter and is usually darker than peat.

muck soil: 1. An organic soil in which the organic matter is well decomposed (U.S. usage). 2. A soil containing 20 to 50 percent organic matter.

mulch: A natural or artificial layer of plant residue or other materials, such as sand or paper, on the soil surface.

mulch tillage: A method of soil preparation that leaves plant residues or other mulching materials on or near the surface.

multiple use: The use of land for more than one purpose; e.g., grazing of livestock, wildlife production, recreation, watershed, and timber production. Multiple use is not necessarily the combination of uses that will yield the highest economic return or greatest unit output.

mutagen: Any substance that causes changes in the genetic structure of subsequent generations.

mutation: An abrupt change in the genetic material that determines the characteristics of a species; the result is offspring which differ from their parents.

N

natality: Births as a component of population change.

national forest: A federal reservation, generally forest, range, or wildland, which is administered by the Forest Service, U.S. Department of Agriculture, under a program of multiple use for timber production, forage, wildlife, watershed, and outdoor recreational purposes.

national monument: A designated area owned by the federal government and administered by the National Park Service, U.S. Department of the Interior, for the purpose of preserving a resource of archaeological, scientific, historical, or aesthetic significance.

national park: A designated area of unusual scenic value owned by the federal government and administered by the National Park Service, U.S. Department of the Interior, to conserve the scenery, flora and fauna, and any natural and historical objects within its boundaries for public enjoyment in perpetuity.

native species: A species that is a part of an area's original fauna or flora.

natural area: 1. A site or area in its natural state, undisturbed by man's activities. 2. An area set aside indefinitely to preserve a representative unit of a major forest, range, or wetland type primarily for the purposes of science, research, or education.

natural gas: A natural fuel containing methane and hydrocarbons that occurs in certain geologic formations.

natural increase or decrease: The difference between births and deaths in a given population in a given period of time.

naturalized plant: A plant introduced from other areas which has become established in, and more or less adapted to, a given region by long-continued growth there.

natural pruning: See *self-pruning*.

natural resources: The air, land, soil, water, plants, animals, minerals, sources of energy, and other persons upon which and whom man depends for his necessities, needs, and wants.

natural revegetation: The natural re-establishment of plants; the propagation of new plants over an area by natural processes.

natural scenic area: An area with exceptional scenery, fauna or flora, and geological or mineral interest, with or without minimum development for access.

natural selection: The natural process of survival of the fittest, by which organisms that best adapt to their environment survive relative to those organisms which adapt less efficiently.

net: A fabric of twine, thread, cord, or the like, tied or woven into meshes and placed to catch fish, birds, insects, etc. Nets are often further defined by their shape, appearance, or method of operation; e.g., gill net, hoop net, trammel net, trap net, mist net, etc.

net migration: In a given population, the difference between the number of organisms entering and leaving through migration during a given time period.

net primary productivity: The rate of increase of organic matter in plant tissues which is in excess of the respiratory utilization by the plants during the time interval of measurement.

niche: The functional role of an organism or population in its community.

nitrogen cycle: The sequence of biochemical changes undergone by nitrogen, wherein it is used by a living organism, liberated upon the death and decomposition of the organism, and coverted to its original state of oxidation.

nitrogen fixation: The conversion of elemental nitrogen to organic combinations or to forms readily usable in biological processes. The conversion is normally carried out by bacteria living symbiotically in legumes, or by free-living soil bacteria.

nitrogen-fixing plant: A plant that can assimilate and fix, with the aid of bacteria living in the root nodules, the free nitrogen of the atmosphere. Legumes with the associated rhizobium bacteria in the root nodules are the most important nitrogen-fixing plants.

noise: Any undesired sound.

nondegradable: A substance that cannot be broken down by natural purifying mechanisms. It may include inorganic substances, salts of heavy metals, sediments, some bacteria and viruses, and some synthetic organic chemicals.

non-game: Those species of wildlife that may not be legally taken by hunting, fishing, or trapping.

nonpoint pollution: Any pollution whose sources cannot be pinpointed.

nonrenewable natural resources: Natural resources that, once depleted, cannot be replaced. Minerals and fossil fuels are the natural resources most frequently classified as nonrenewable.

no tillage: A method of planting crops that involves no seedbed preparation other than opening the soil for the purpose of placing the seed at the intended depth. This usually involves either opening a small slit or punching a hole into the soil. There is usually no cultivation during crop production, and chemical weed control is normally used. This method is also referred to as *slot planting* or *zero tillage.*

noxious species: A plant that is undesirable because it conflicts, restricts, or otherwise causes problems under the management objectives.

nuclear energy: Energy released as particulate or electromagnetic radiation and heat during reactions of atomic nuclei.

nuclear fission: The splitting of a heavy nucleus into two approximately equal parts, which are radioactive nuclei of lighter elements, accompanied by the release of a large amount of energy and generally one or more neutrons.

nuclear fusion: The combining of atomic nuclei of very light elements by collision at high speed to form new and heavier elements, resulting in release of large amounts of energy.

nuclear power plant: A device that converts atomic energy into usable power; heat produced by a reactor makes steam to power turbines which turn electricity generators.

nuclear reactor: A device in which a fission chain reaction can be initiated, maintained, and controlled.

nursery: 1. A place where plants, such as trees, shrubs, vines and grasses, are propagated for transplanting or for use as stocks for grafting. 2. A planting of young trees or other plants, the young plants being called nursery stock or planting stock.

nutrients: Those elements or compounds essential to growth and development of living things: carbon, oxygen, nitrogen, potassium, phosphorus, etc.

nymph: An immature developmental form characteristic of the preadult stage in insects that do not have a pupal stage, such as mayflies and stoneflies. See *larva.*

O

observation well: A hole bored to a desired depth below the ground surface and used for observing the water table or piezometric level.

ocean thermal energy conversion: Electricity generation by making use of the temperature difference (some 4 °C) between the top and bottom layers of the ocean to convert a fluid to vapor, which in turn powers a turbine generator.

odd area (wildlife): A small area of land, such as a fence corner or an irregularly shaped area, that may be used to produce wildlife habitat.

offal: The intestines and discarded parts, including paunch manure, of slaughtered animals.

oil "fingerprinting": A method that identifies oil spills so they can be traced back to their sources.

oil shale: A fine-grained shale impregnated with natural hydrocarbons from which an oil-like substance may be distilled.

oil spill: The accidental discharge of oil into bodies of water; damage may be controlled by chemical dispersion, combustion, mechanical containment, and absorption.

oligotrophic lakes: Deep lakes that have a low supply of nutrients; thus they support very little organic production. Dissolved oxygen is present at or near saturation throughout the lake during all seasons of the year. See *eutrophic lakes.*

omnivore: An animal that can use both plants and animals as food sources.

oncogenic: A substance that causes tumors, whether benign or malignant.

open burning: Uncontrolled fires in an open dump.

open pit mining: The surface mining of materials that creates a large pit. This method is used primarily for stone, sand, gravel, iron, and copper.

open range: An extensive grazing area on which the movement of livestock is unrestricted.

open season: The period of time during which the pursuing and taking of wildlife is permitted.

open space: A relatively undeveloped green or wooded area provided, usually within an urban development, to lessen feelings of congested living.

open system: Any system in which energy and matter are exchanged between the system and surroundings. A living organism is an example.

optimum yield: The maximum sustained yield of any harvestable crop.

ore: A mineral containing a metallic or other constituent for which it can be mined and worked.

organic: 1. That which refers to, or is derived from, living organisms. 2. (chemistry) Any compound containing carbon.

organic farming or gardening: A system of farming or home gardening that utilizes organic wastes and composts to the exclusion of chemical fertilizers.

organic fertilizer: Animal manure or other organic materials used as plant nutrients. Compare *inorganic fertilizer.*

organic soil: A soil that contains a high percentage (greater than 20 or 30 percent) of organic matter throughout the solum.

organism: Any living thing.

organophosphate: One of a diverse group of nonpersistent, synthetic chemical insecticides that contain phosphorous; they act chiefly through breaking down nerve and muscle response; examples are parathion, Malathion and Schradan.

osmosis: The tendency of a fluid to pass through a permeable membrane, as the wall of a living cell, into a less concentrated solution, so as to equalize concentrations on both sides of the membrane.

outcrop: The surface exposure of bedrock or strata.

outfall: The place where an effluent is discharged into receiving waters.

outlet: The point of water discharge from a stream, river, lake, tidewater or artificial drain.

outlet channel: A waterway constructed or altered primarily to carry water from man-made structures, such as terraces, tile lines, and diversions.

overburden: The earth, rock, and other materials that lie above a mineral deposit.

overfall: 1. An abrupt change in stream channel elevation. 2. The part of a dam or weir over which the water flows.

overfire air: The air forced into the top of an incinerator to fan the flame.

overfishing: The exploitation of a fish stock to the point where it is a small fraction of its original size. The fish harvest accordingly declines.

overgrazed range: A range that has lost its productive potential because of over-utilization.

overgrazing: An intensity of grazing so heavy that it impairs future forage production and causes deterioration through damage to plants, soil, or both.

overpopulation: A population density that exceeds the capacity of the environment to supply the health requirements of the individual organism.

oversimplification: An excessive reduction of diversity in an ecosystem.

overstocked (forestry): A condition in a stand or forest indicating more trees than normal or that full stocking would require.

overstocking: The placing of a number of animals on a given area that will result in overuse at the end of the planned grazing period.

overstory: The trees in a forest stand that form the upper crown cover. See *understory*.

overturn: The period of mixing (turnover), by top to bottom circulation, of previously stratified water masses. This phenomenon may occur in spring and/or fall; the result is a uniformity of physical and chemical properties of the water at all depths.

oxbow lake: A generally crescent-shaped lake which was formed by a stream meander being cut-off from the main stream.

oxidant: Oxygen-containing compounds which can oxidize other compounds. Specific examples include ozone, peroxyacetyl nitrates, and nitrogen dioxide.

oxidation: The process of oxygen combining with other elements.

oxidation pond: A man-made lake or pond in which organic wastes are reduced by bacterial action. Often oxygen is bubbled through the pond to speed the process.

oxygen deficit: The difference between observed oxygen concentration and the amount that would theoretically be present at 100 percent saturation for existing conditions of temperature and pressure.

ozone (O_3): A highly reactive molecule made up of three atoms of oxygen that usually forms high in the atmosphere and filters out harmful ultraviolet radiation. It may also be formed near the earth's surface as a component of photochemical smog.

ozone layer: The region of the upper atmosphere (around 18 miles altitude) where the ultraviolet component of sunshine generates ozone; the ozone layer shields the surface of the earth from harmful radiation.

P

packed tower: A pollution control device that forces dirty air through a tower packed with crushed rock or wood chips while liquid is sprayed over the packing material. The pollutants in the air stream either dissolve or chemically react with the liquid.

palatability: The plant characteristics or conditions that stimulate a selective response by animals.

PAN (peroxyacetyl nitrate): A pollutant created by the action of sunlight on hydrocarbons and nitrogen oxides in the air that form an integral part of photochemical smog.

pan: A horizon or layer in soil that is strongly compacted, indurated, or very high in clay content.

pan, pressure or induced: A subsurface horizon or soil layer having a high bulk density and a lower total porosity than the soil directly above or below it as a result of pressure applied by normal tillage operations, or by other artificial means; it is also frequently referred to as plow pan, plowsole, tillage pan, or traffic pan.

parasite: An organism that lives on or in a host organism during all or part of its existence. Its nourishment is obtained at the expense of the host.

parent material (soils): The unconsolidated, more or less chemically weathered mineral or organic matter from which the solum of soils has developed by pedogenic processes. The C horizon may or may not consist of materials similar to those from which the A and B horizons developed.

particulates: The finely divided solid or liquid particles in the air, or in an emission into the air. Particulates include dust, smoke, fumes, mist, spray, and fog.

pasture: An area devoted to the production of forage, introduced or native, which is harvested by grazing.

pasture improvement: Any practice of grazing, mowing, fertilizing, liming, seeding, scattering droppings, contour furrowing, or other methods of management designed to improve vegetation for grazing purposes.

pasture management: The application of practices to keep pasture plants growing actively over as long a period as possible so that they will provide palatable feed of high nutritive value; to encourage the growth of desirable grasses and legumes while crowding out weeds, brush, and inferior grasses.

patch logging: A system of clear-cutting by which plots of about 40 to 200 acres are logged as single settings, but are separated from each other by living forest. (The purpose of the practice is to obtain optimum dispersal of seed, reduce the erosion hazard, and avoid the high fire hazard of extensive areas of slash.)

pathogen: An organism capable of producing disease.

PCB (polychlorinated byphenyls): A group of organic compounds used in the manufacture of plastics. They are toxic, persistent, tend to concentrate in the environment, and are frequently confused with a pesticide.

peat: An unconsolidated soil material consisting largely of undecomposed, or only slightly decomposed, organic matter accumulated under conditions of excessive moisture.

peat soil: An organic soil containing more than 50 percent organic matter.

ped: A unit of soil structure, such as an aggregate, crumb, prism, block, or granule, formed by natural processes.

pedogenic: That which refers to the factors and processes of soil formation.

pelagic zone: The open sea, away from the shore. This zone is comparable to the limnetic zone of lakes.

pellet: A mass of undigested hair, bones, feathers, etc., regurgitated by a carnivorous bird or mammal.

pelt: The skin, usually undressed or raw with its hair or wool, of furbearing animals, goats, or sheep.

perched water table: The surface of a local zone of saturation held above the main body of groundwater by an impermeable layer of stratum, usually clay, and separated from the main body of groundwater by an unsaturated zone.

percolation: The downward flow or filtering of water through pores or spaces in rock or soil.

perennial plant: A plant that normally lives three or more years.

permafrost: 1. Permanently frozen material underlying the solum. 2. A perennially frozen soil horizon.

permanent pasture: Grazing land occupied by perennial pasture plants or by self-seeding annuals, usually both, which remains unplowed for many years.

permeability: The capacity for transmitting a fluid. It is measured by the rate at which a fluid of standard viscosity can move through material in a given interval of time under a given hydraulic gradient. See *soil permeability.*

persistent chemicals: Any chemicals that do not break down easily, but remain in the environment after a growing season.

persistent pollutant: A harmful chemical that requires a long time to be broken down or degraded to a harmless level. Some radioisotopes and many synthetic organic chemicals, such as DDT and PCB's, are so classified. See *pollutant.*

pesticide: Any substance or chemical applied to kill or control weeds, insects, algae, rodents, and other undesirable pests.

pesticide tolerance: The amount of pesticide residue allowed by legislation to remain in or on a harvested crop.

pH: A numerical measure of acidity or hydrogen ion activity. A pH value of 7.0 is neutral; pH values below 7.0 are acid; pH values above 7.0 are alkaline.

phenols: Organic compounds that are by-products of petroleum refining, tanning, textile dye, and resin manufacture. Low concentrations can cause taste and odor problems in water; higher concentrations can kill aquatic life.

pherome: A substance secreted by an animal that influences the behavior or morphological development, or both, of other animals of the same species.

phosphates: Chemical compounds that contain phosphorus.

photochemical process: The chemical alterations caused by radiant light energy acting on various gases in the atmosphere.

photochemical smog: A complex mixture of air pollutants (oxidants) produced in the atmosphere by the reaction of hydrocarbons and nitrogen oxides under the influence of sunlight. Three of the most harmful photochemical oxidants are ozone (O_3), peroxyacetlynitrate (PAN), and various aldehydes.

photosynthesis: The manufacture by plants of carbohydrates and oxygen from carbon dioxide and water in the presence of chlorophyll, using sunlight as an energy source.

photovoltaic cell: A device that converts solar radiation to a current of electricity; also called *solar cell.*

phreatic line: The line marking the upper surface of the zone of water saturation in the soil.

phytoplankton: The unattached microscopic plants of plankton. See *plankton, zooplankton.*

phytotoxic: Any chemical agent injurious to vegetation.

piezometric surface: The imaginary surface to which water in a well will rise above an aquifer.

pig: A container, usually lead, used to ship or store radioactive materials.

pile: A nuclear reactor.

pioneer: A plant capable of invading bare sites and persisting there; such are then supplanted by other, more exacting, species as succession proceeds.

piscivore: A fish-eating animal.

plankton: Those suspended, floating, or weakly swimming microscopic plants and animals in the water that provide a base for the aquatic food chain. See *phytoplankton, zooplankton.*

planting stock: The young plants, either nursery stock or wildlings, for planting.

plant material center: A place where both domestic and introduced plants are assembled and evaluated as to their value and use in a conservation program. (Plants are assembled; their performance is evaluated; selections are made and increased for field testing; varieties are named and released; and foundation-quality seed and/or stock is produced and distributed to cooperative seed growers and nurseries for commercial production and use.)

plant nutrients: The essential elements, or groups of elements, taken in by a plant; they may include nutrients obtained from fertilizers. See *essential element, macronutrients, micronutrients.*

plant succession: The vegetation development whereby an area becomes successively occupied by different plant communities, each of higher ecological order.

plastics: Man-made materials containing primarily carbon and hydrogen, with lesser amounts of oxygen, nitrogen and various organic and inorganic compounds. Plastics, technically referred to as "polymers," are normally solid in their finished state, but at some stage in their manufacture, under sufficient heat and pressure, they will flow sufficiently to be molded into desired shape.

plume: The pattern made by a visible emission from a flue, stack, or chimney.

poaching: The act of taking wildlife illegally.

point row: A row of plants that forms an angle with another row instead of paralleling it to the end of the field. A row that "comes to a point" which ends part way across a field rather than at the edge of the field.

point source (pollution): A stationary source of pollution, such as a smoke stack or a discharge pipe. See *nonpoint pollution.*

pole: 1. A young tree of not less than four inches and usually not more than eight to twelve inches d.b.h. 2. Any considerable length of round timber below sawlog size that is ready without further conversion to use as utility poles, etc.

pollutant: Any introduced substance that makes a resource impure, unclean, or unfit for use; the term is applied especially to substances discharged into the atmosphere or bodies of water.

pollution: The condition caused by the presence in the environment of substances of such character, and in such quantities, that the quality of the environment is impaired or rendered offensive to life. See *air pollution, water pollution.*

pond: A natural or man-made depression, smaller than a lake, filled with water. Ponds may be a source of water for animals, household use, irrigation, and recreation; they help prevent floods and erosion; and they tend to maintain the water table.

pools: Those areas of a stream where the velocity of current is reduced, and a favorable habitat for plankton is created. Silts and other loose materials that settle to the bottom of pools are favorable habitat for burrowing forms of benthos. See *riffle.*

population: A group of organisms of the same kind.

population control: Collectively all methods of fertility control, plus regulation of migration, in order to effect population growth or decline (usually decline).

population crash (dieback): The massive number of deaths which occur when a population exceeds the ability of its environment to support its numbers.

population density (distribution): The number of organisms in a particular population for a given unit of area.

population index: Any indicator of the size of a population.

population pressure: The combined effects of a population upon its environment.

population pyramid: A special type of bar chart that shows the distribution of a population by age and sex.

population turnover: The length of time it takes for a given year class to disappear from the population.

porosity: The degree to which the total volume of a soil, sediment, or rock is permeated with pores or cavities, generally expressed as a percentage of the whole volume unoccupied by solid particles.

post-emergence (crop production): The application of chemicals, fertilizers, or other materials, and operations associated with crop production after the crop has emerged through the soil surface.

potable water: Water that is safe for drinking, or use in cooking.

ppm (parts per million): The ratio of the number of parts of a substance in air or a liquid to one million. (In air, ppm is usually expressed as a volume/volume ratio; in water, a weight/volume ratio.)

prairie: A tract of level to hilly land that has a dominance of grasses and forbs, a scarcity of shrubs, and is treeless. The natural plant community consists of various mixtures of tall, mid, and short growing native species, respectively known as true prairie, mixed prairie, and shortgrass prairie.

precipitation: A general term for all forms of falling moisture, including rain, snow, hail, and sleet.

precipitate: A solid that separates from a solution because of some chemical or physical change.

precipitators: An air pollution control device that collects particles from an emission by mechanical or electrical means.

predator: An animal that lives by capturing and devouring other animals.

pre-emergence (crop production): The application of chemicals, fertilizers, or other materials, and operations associated with crop production before the crop has emerged through the soil surface.

prescribed burning: The deliberate use of fire under conditions by which the area to be burned, the intensity of heat, and the rate of spread are controlled so as to achieve predetermined, professionally recommended objectives for silviculture, wildlife management, grazing, fire-hazard reduction, etc.

pressurized water reactor (PWR): A type of nuclear reactor in which water heated by the reactor is kept under pressure to prevent formation of steam, and is constantly recirculated. A second circuit in contact with the first is not under pressure, and water becomes steam in the secondary circuit.

pretreatment: Those processes used to reduce the amount of pollution in water before it enters sewers or a treatment plant.

prey: An animal that is, or may be, seized by another for food.

primary materials: Virgin or new materials used for manufacturing basic products.

primary productivity: The rate at which organic matter is stored by photosynthetic and chemosynthetic activity of producer organisms (autotrophs); e.g., grams per day.

primary succession: Ecological succession that begins on an area (such as bare rock, lava, sand) that has not been previously occupied by a community of organisms.

primary waste treatment: The first stage in wastewater treatment in which substantially all floating or settleable solids are mechanically removed by screening and sedimentation.

prime agricultural land: Land that has the best combination of physical and chemical characteristics for producing food and fiber crops; it is level (or nearly so), and has the soil quality, growing season, and moisture supply necessary for long-term sustained production of high yields.

prime meridian: The meridian of longitude 0°, used as the origin for measurement of longitude; the meridian of Greenwich, England, is almost universally used for this purpose.

producer (biology): An organism that can use radiant energy to synthesize organic substances from inorganic materials. See *consumers, reducers.*

productivity: The rate at which radiant energy is stored by activities of producer organisms in the form of organic substances which can be used as food.

profile: A vertical section of the surface of the ground, or of underlying strata, or both, along any fixed line.

profundal zone: The deep, bottom-water area beyond the depth of effective light penetration. All of the lake floor beneath the hypolimnion.

protoplasm: The living material in cells of plants and animals.

pruning (forestry): The removal of live or dead branches from standing trees, usually the lower branches of young trees, for the improvement of the tree or its timber; the cutting away of superfluous growth, including roots, from any plant to improve its development. See *self-pruning.*

public access site: A controlled area which affords the public a point of ingress to a particular facility such as a beach, river, pond, or lake.

puddled soil: A dense soil dominated by massive or single-grain structure, almost impervious to air and water, resulting from handling a soil when it is in a wet, plastic condition so that when it dries it becomes hard and cloddy.

puddling: The act of destroying soil structure and reducing both porosity and permeability; the process is sometimes used to reduce leakage of reservoirs and canals.

pulp: Fiber material that is produced by chemical or mechanical means, or a combination of the two, from fibrous cellulose raw material and from which, after suitable treatment, paper and paperboard are made; it may include virgin wood pulp, secondary fibers, or rags.

pulpwood: Roundwood cut from trees and prepared primarily for manufacture into wood pulp or wood fiber; it includes chips manufactured from roundwood in the forest, or at chipmills remote from a pulp mill.

pulverization: The process of crushing or grinding of materials into small pieces.

pupa: An intermediate, usually quiescent, form following the larval stage in insects, and maintained until metamorphosis to the adult stage. See *larva.*

pure forest: A forest composed essentially of trees of one species. In practice, the term usually refers to a forest in which at least 80 percent of the trees are of one species. It may also be called a *pure timber stand.* See *mixed forest.*

putrefaction: The decomposition of organic matter by microorganisms that results in odors because of incomplete oxidation.

putrescible: Organic matter capable of being decomposed by microorganisms.

pyrolysis: The process of chemically decomposing an organic substance by heating it in an oxygen-deficient atmosphere. High heat is usually applied to the material in a closed chamber to evaporate all moisture and to separate materials into various hydrocarbon gases and carbonlike residue. With suitable equipment, the gases may be collected; the residue may be further processed into useful materials, or it can be disposed of as waste.

Q

quarry: An open pit, mine, or excavation where stone, sand, gravel, or minerals are obtained from open faces, with or without a waste rock overburden.

quench tank: A water-filled tank used to cool incinerator residues, or hot materials during industrial processes.

quiescent: The temporary cessation of development, movement, or other activity; for example, the pupal stage of a life cycle.

R

raceway: A rectangular fish rearing unit that has a continuous flow of fresh water to maintain suitable oxygen, temperature, and cleanliness for intensive production.

rad (radiation absorbed dose): A unit of the power of any radiation actually absorbed by a target (person or object) expressed as the amount of energy (in ergs) per gram of absorbing material.

radiation: The emission of particles or rays by the nucleus of an atom.

radiation standards: Regulations that govern exposure standards, permissible concentrations, and transportation of radioactive materials.

radioactive: Substances that emit rays either naturally or as a result of scientific manipulation.

radioactive waste: The radioactive end product of nuclear plants or processes.

radiobiology: The study of the principles, mechanisms, and effects of radiation on living things.

radioecology: The study of the effects of radiation on plants and animals in natural communities.

radioisotopes: 1. The radioactive forms of chemical compounds. 2. The isotope of an element whose nuclei are capable of spontaneously emitting radiation in the form of alpha particles, beta particles, or gamma rays.

rainfall intensity: The rate at which rain is falling at any given instant, usually expressed in inches per hour.

range: 1. Rangeland, including forestlands that support an understory or periodic cover of herbaceous or shrubby plants suitable for grazing. 2. In biology, the geographic area occupied by an organism.

rangeland: Land on which the native vegetation (climax or natural potential) is predominantly grasses, grasslike plants, forbs, and shrubs suitable for grazing or browsing. Rangeland includes lands revegetated naturally or artificially to provide a forage cover that is managed like native vegetation.

raptor: A bird of prey.

rare (species): A species of organism present in such small numbers that it could become endangered if its environmental conditions worsen.

rasp: A waste-processing machine that grinds waste into a manageable material and helps prevent odor.

raw sewage: The untreated wastewater from domestic and commercial sources.

rearing pond: A pond in which aquatic organisms, especially fish, are raised to a desired size.

receiving stream: The body of water into which effluent is discharged.

recharge: The process by which water is added to the zone of saturation.

reclamation: The process of reconverting disturbed lands to their former or other productive uses.

recoverable resources: Materials that still have useful physical or chemical properties after having served a specific purpose and can be reused or recycled for the same or other purposes.

recovery: The process of obtaining materials or energy resources from solid wastes; the process is also called *extraction, reclamation,* or *salvage.*

recreation land: Land used, or usable, primarily for outdoor recreational activities and facilities.

recreation resources: Land and water areas and their natural attributes, with or without man-made facilities, that provide opportunities for outdoor recreation.

recycling: The conversion of solid waste into new products by using the resources contained in discarded materials.

redd: A type of fish spawning area associated with flowing water and clean gravel. Fishes that utilize this type of spawning area include trout, salmon, some minnows, etc.

red tide: A visible red-to-orange coloration of the sea caused by the presence of a bloom of certain plankton; it is often the cause of major fish kills.

reduced tillage: A system in which the primary tillage operation is performed in conjunction with special planting procedures to reduce or eliminate secondary tillage operations.

reducers: Any organisms, usually bacteria or fungi, that break down complex organic material into simpler compounds; they may also be called *decomposers.* See *producers, consumers.*

reforestation: The restocking of an area with forest trees.

refuse reclamation: The conversion of solid waste into useful products; e.g., composting organic wastes to make soil conditioners.

regeneration: The renewal of a tree crop by natural or artificial means.

regolith: The unconsilidated mantle of weathered rock and soil material on the earth's surface; loose earth materials above solid rock.

rehabilitation: The returning of land to productivity in conformity with a prior land use plan.

relative humidity: The ratio of the actual amount of water vapor present in the portion of the atmosphere under consideration to the quantity of vapor that would be there if the atmosphere were saturated.

release: The freeing of a tree, or group of trees, from immediate competition by cutting, spraying with a herbicide, or otherwise eliminating growth that is overtopping or crowding.

relict: A remnant or fragment of a flora that remains from a former period when it was more widely distributed.

REM (Roentgen equivalent man): A measurement of radiation dose to the internal tissue of man.

remote sensing: The acquisition of information by unattached means. The remote sensing of natural resources uses the technologies of aerial photography, radar, lasers, multispectral scanners, and sonar.

REP (Roentgen equivalent physical): A measurement of radiation by energy development in human tissue.

reproductive potential: The maximum rate of increase in numbers of individuals of a species or population under the most optimum conditions, in contrast to actual reproduction obtained under existing conditions.

reservoir: Any natural or artificial holding area used to store, regulate, or control water.

residual soil (obsolete): A soil formed in material weathered from bedrock without transportation from the original location.

resistant crop variety: A plant variety that is genetically bred to be resistant to certain insects, fungi, and diseases.

resource recovery: The process of obtaining matter or energy from materials formerly discarded; e.g., solid waste, wood chips.

respiration: The complex series of chemical and physical reactions in all living organisms by which the energy and nutrients in foods are made available for use. Oxygen is used and carbon dioxide released during the process. See *metabolism.*

restoration: The process of restoring site conditions as they were before disturbance.

retention: The amount of precipitation on a drainage area that does not escape as runoff. It is the difference between total precipitation and total runoff.

return flow: That portion of the water diverted from a stream that finds its way back to the stream channel either as surface or underground flow.

reuse: The reintroduction of a commodity into the economic stream without any change.

reverberation: The echoes of sound that persist in an enclosed space after the sound source has stopped.

reverse osmosis: An advanced method of waste treatment that uses a semi-permeable membrane to separate water from pollutants.

revetment: A facing of stone or other material, either permanent or temporary, placed along the edge of a stream to stabilize the bank and to protect it from the erosive action of the stream.

riffles: The fast flowing sections of a stream where shallow water races over stones and gravel; they usually support a wider variety of bottom organisms than other stream sections; also called *rifts.*

rill: A small, intermittent water course with steep sides, usually only a few inches deep and, hence, no obstacle to tillage operations.

Ringlemann chart: A series of shaded illustrations used to measure the opacity of air pollution emissions. The chart ranges from light grey (number 1) through black (number 5) and is used to set and enforce emission standards.

riparian land: Land situated along the bank of a stream or other body of water.

riprap: Broken rock, cobbles, or boulders placed on earth surfaces, such as the face of a dam or the bank of a stream, for protection against the action of water (waves); the term is also applied to brush or pole mattresses, brush and stone, or other similar materials used for soil erosion control.

river basin: The land area drained by a major river and its tributaries; the United States has been divided into twenty river basins.

rock-fill dam: A dam composed of loose rock usually dumped in place, often with the upstream part constructed of handplaced or derrick-placed rock and faced with rolled earth or with an impervious surface of concrete, timber, or steel.

rodenticide: A chemical or agent used to destroy mice, rats, or other rodent pests.

rookery: The breeding place of a group of birds or seals.

roost: The place, or the support upon which, birds rest—especially at night.

root zone: The part of the soil that is penetrated, or can be penetrated, by plant roots.

rotary tillage: The process of using a powered rotary tillage tool to loosen and mix soil.

rotation forestry: The planned number of years required to establish and grow trees to a specific maturity. The age at harvest is called the rotation age.

rotation grazing: A system of pasture utilization during which short periods of heavy stocking are followed by periods of rest for herbage recovery during the same season; generally used on tame pasture or cropland pasture.

rotenone: An organic compound (extracted from the roots of derris, timbo, and cube) used as an insecticide and fish poison.

roughage: A feed, such as hay or stover, with high fiber content and low total digestible nutrients.

rough fish: Those species of fish not prized for game purposes; most are more tolerant of changing environmental conditions than are game species.

row crop: A crop planted in rows, normally to allow cultivation between rows during the growing season.

rubber cracking method: A method for determining levels of air pollution; stretched strips of unvulcanized rubber are exposed to the air, and the average depth of cracks induced by oxidants determines the intensity of these air pollutants in the atmosphere.

rubbish: Solid waste—excluding food waste and ashes—from homes, institutions, and work-places.

rubble: Broken pieces of masonry and concrete.

runoff (hydraulics): That portion of the precipitation on a drainage area that is discharged from the area in stream channels. Types include surface runoff, groundwater runoff, and seepage.

S

safe yield: The rate at which water can be withdrawn from a groundwater basin (aquifer) without depleting the supply to such an extent that undesirable effects result.

salination: The process whereby soluble salts accumulate in the soil.

saltation: Particle movement in water or wind where particles skip or bounce along the stream bed or soil surface.

salinity: The degree of salt in water.

salt marsh: A low area adjacent to the sea that is covered with salt-tolerant vegetation and is regularly flooded by the high tide; a similar inland area near a saline spring or lake, but that is not regularly flooded.

salt water intrusion: The invasion of fresh water by salt water. If the salt water comes from the ocean, it is called sea water intrusion.

salvage: The utilization of waste materials.

sand: A soil particle between 0.05 and 2.0 millimeters in equivalent diameter.

sanitary landfill: A site on which solid wastes are disposed of by being spread in thin layers, compacted to the smallest practical volume, and covered with soil by the end of each working day.

sanitary sewers: The underground pipes that carry only domestic or commercial waste, not stormwater.

sapling: A young tree that is more than three feet in height, but less than four inches in diameter at breast height.

saprophyte: An organism that lives on dead or decaying organic matter. See *scavenger*.

saprophytic: The obtaining of food by absorbing the products of organic breakdown and decay.

sapwood: The outermost portion of the wood or xylem of a tree trunk; it is usually lighter in color than the heartwood, contains living cells, and is active in the translocation of water and nutrients.

saturate: 1. To fill all the voids between soil particles with liquid. 2. To form the most concentrated solution possible under a given set of physical conditions in the presence of an excess of the substance.

saturation point: 1. (soils) That point at which a soil or an aquifer will no longer absorb any amount of water without losing an equal amount. 2. (wildlife) The maximum population density under which a species will normally live.

sawlog: A log considered suitable both in size and quality for producing sawn lumber (timber cut by a saw to any dimensions).

sawtimber: Trees with logs suitable in size and quality for the production of lumber.

scale (forestry): 1. To estimate the amount of sound wood in a log or bolt, or group of logs or bolts, using a given unit of measure or weight. 2. The estimated content of a log or group of logs or bolts.

scalping: The removal of sod or other vegetation in spots or strips.

scarify: The process of abrading, scratching, or modifying the surface; for example, to scratch the impervious seed coat of hard seed, or to break the surface of the soil with a narrow-bladed implement.

scavenger: An animal that eats animal wastes and the dead bodies of animals not killed by itself.

scenic easement: An easement restricting development in order to protect roadside views and natural features.

scour: To abrade and wear away; used to describe the wearing away of terraces, diversion channels, or stream beds.

scrap: The discarded or rejected materials, or parts of materials, that result from manufacturing or fabricating operations, and which are suitable for reprocessing.

screen: A perforated plate or meshed fabric used to separate coarse from finer parts.

screening: 1. The use of racks of screens to remove coarse floating and suspended solids from sewage. 2. The use of any vegetative planting, fencing, ornamental wall of masonry, or other architectural treatment, earthen embankment, or a combination of any of these which will effectively hide from view any visually undesirable sites.

scrub: Densely growing, low, often stunted trees or shrubs.

scrubber: A device that uses a liquid filter to remove gaseous and liquid pollutants from an air stream.

S curve: A curve with the shape of the letter S that depicts the leveling off from an exponential growth (J curve). It is characteristic of the stabilization of previously unchecked population increase.

seasonal grazing: Grazing restricted to a specific season.

secchi disk: A disk (20 centimeters in diameter, painted black-and-white in alternate quadrants) used in fish culture and limnology to measure the passage of light through water.

secondary material: A material that is utilized in place of a primary or raw material in manufacturing a product.

secondary pollutants: Those pollutants that result from the chemical reactions involving primary pollutants or related atmospheric contaminants; for example, oxidants from photochemical activity.

secondary productivity: The rate at which organic matter is stored in consumer organisms (heterotrophs). See *primary productivity, productivity.*

secondary succession: Ecological succession that begins on an area (such as abandoned farmland, a new pond, or land disrupted by fire) that had previously been occupied by a community of organisms.

secondary tillage: Any tillage operation following primary tillage designed to develop a seedbed more satisfactory for planting; the soil is normally worked to a shallower depth than in primary tillage. Secondary tillage provides additional pulverization, levels and firms the soil, closes air pockets, and kills weeds.

secondary treatment: The biochemical treatment of wastewater after the primary stage, using bacteria to consume the organic wastes. The use of trickling filters or the activated sludge process removes floating and settleable solids and about 90 percent of oxygen demanding substances and suspended solids. Disinfection with chlorine is the final stage of secondary treatment.

second-growth forest: A forest regenerating naturally after removal of the old stand by cutting, fire, or other cause. See *virgin forest.*

second law of thermodynamics: A scientific law stating that in any spontaneous process there is a net increase in disorder, or entropy, when both the system and its environment are considered. It can also be expressed as the degradation of energy to less useful forms (heat) as it flows through an ecosystem.

sediment: The solid material, both mineral and organic, that is in suspension, is being transported, or has been moved from its site of origin by air, water, gravity, or ice, and has come to rest on the earth's surface either above or below sea level.

sedimentary cycle: A biogeochemical cycle by which materials are primarily moved from land to sea and back again; examples include the phosphorus and sulfur cycles.

sedimentary rock: Rock formed by the lithification of mechanical, chemical, or organic sediments.

sedimentation: The process or action of depositing sediment.

sedimentation basin: A basin or pond at the upper end of a channel or reservoir to store sediment-laden water for a sufficient length of time for the sediment to be deposited.

sedimentation tanks: Holding areas for wastewater where floating wastes are skimmed off and settled solids are pumped out for disposal.

seed: The fertilized and ripened ovule of a seed plant that is capable, under suitable conditions, of independently developing into a plant similar to the one that produced it.

seedbed: The soil prepared by natural or artificial means to promote the germination of seed and the growth of seedlings.

seedling: 1. Any young plant grown from seed. 2. (forestry) A young tree or shrub grown from seed up to the sapling stage.

seed tree: A tree that produces seed; it is usually a superior tree left standing at the time of cutting to produce seed for reforestation.

seepage: 1. Water escaping through or emerging from the ground along an extensive line or surface (as contrasted with a spring where the water emerges from a localized spot). 2. (percolation) The slow movement of gravitational water through the soil.

seine: A large net, one edge provided with sinkers (weights) and the other with floats, which hangs vertically in the water, and when its ends are drawn together or ashore encloses fish.

selective cutting (forestry): A system of cutting in which single trees (usually the largest), or small groups of such trees, are removed for commercial production or to encourage reproduction in the openings of the remaining stand. See *clearcutting.*

selective grazing: The tendency for grazing animals to graze certain plants in preference to others.

selective herbicide: A chemical intended to kill only certain types of plants, especially broad-leafed weeds, and not harm other plants (such as farm crops or lawn grasses).

self-pruning: The natural death and fall of branches from live trees due to causes such as light and food deficiencies, decay, insect attack, snow, and ice.

semiarid: A term applied to regions or climates where moisture definitely limits the growth of most crops but is normally greater than under arid conditions. Dryland farming methods or irrigation generally are required for crop production. The upper limit of average annual precipitation in cool semiarid regions is as low as 15 inches, but in tropical semiarid regions it may be as high as 45 or 50 inches. See *arid.*

senescense: The aging process. It can also refer to lakes in advanced stages of eutrophication.

sensitive organisms: Organisms that exhibit a rapid response to environmental changes and are killed, driven out of the area, or as a group are substantially reduced in numbers when their environment is fouled; they are also called *intolerant organisms.*

separation: The systematic division of solid waste into designated categories.

separator: Any of various kinds of apparatus for dividing a mixture into its constituent parts.

septic tank: An underground tank used for the deposition of domestic wastes. Bacteria in the wastes decompose the organic matter, and the sludge settles to the bottom. The effluent flows through drains into the ground and sludge is pumped out at regular intervals.

sere: Each in a series of stages that follow one another in the process of ecologic succession.

settleable solids: The solids in a liquid that can be removed by stilling the liquid.

settling basin: An enlargement in the channel of a stream to permit the settling of materials carried in suspension.

settling chamber: Any chamber designed to reduce the velocity of the products of combustion and thus to promote the settling of flyash from the gas stream. See *baffle.*

settling tank: A holding area for wastewater where heavier particles sink to the bottom and can be siphoned off.

sewage: The organic waste and wastewater produced by residential and commercial establishments.

sewage sludge: The settled solids, combined with varying amounts of water and dissolved materials, that is removed from sewage by screening, sedimentation, chemical precipitation, or bacterial digestion.

sewer: A channel that carries wastewater and storm water runoff from the source to a treatment plant or receiving stream. Sanitary sewers carry household and commercial waste; storm sewers carry runoff from rain or snow; combined sewers are used for both purposes.

sewerage: The entire system of sewage collection, treatment, and disposal. The term also applies to all effluent carried by sewers.

sex ratio: The ratio of the number of males to 100 females in a population.

sheet flow: Water, usually storm runoff, flowing in a thin layer over the ground surface; it may also be called *overland flow.*

shelterbelt: See *windbreak.*

shelterwood cutting (forestry): A system of timber regeneration in which the mature crop is removed in two or more successive cuttings over a period of years; it is designed to establish a new crop of seedlings under the protection of the old trees. The first cut may be a preparatory cutting if the stand is dense, followed by a seed cutting to encourage seeding from seed trees for regeneration. The last cut is the final removal cutting after reproduction is established.

shifting cultivation: A farming system in which land is cleared, the debris burned, and crops grown for a short period; the land is then abandoned and a new clearing made; it's also called *slash-and-burn agriculture,* or *swidden agriculture.*

shooting preserve: An area devoted to the shooting of pen-raised game under controlled conditions.

shrink-swell potential: The susceptibility of a soil to volume change due to loss or gain in moisture content.

shrub: A woody perennial plant differing from a tree by its low stature and by its characteristic of generally producing several basal shoots instead of a single bole.

side slopes (engineering): The slopes of the sides of any cut or fill section, such as canals, dams, ditches, diversions, terraces, and channels. It is usually given as a ratio of horizontal distance to vertical distance; e.g., a 2:1 slope means a horizontal distance of 2 feet for every 1 foot in vertical distance.

silt: A soil separate consisting of particles between 0.05 and 0.002 millimeter in equivalent diameter. See *soil separates.*

silt basin: See *sedimentation basin.*

siltation: The process of depositing silt. See *sedimentation.*

silvicutlure: The art of producing and caring for a forest.

sinking: A method of controlling oil spills by using an agent to trap the oil, thereby causing both to sink to the bottom of the body of water and degrade.

site (ecology): 1. An area considered for the combination of biotic, climatic, and soil conditions that affect its capacity to produce vegetation. 2. An area sufficiently uniform in soil, climate, and natural biotic conditions to produce a particular climax vegetation.

site index (forestry): A numerical expression accepted as an indicator of the quality or timber productivity, of a site.

skimming: The use of a machine to remove oil or scum from the surface of the water.

slag: The waste product of smelting; it contains mostly silicates.

slash: The branches, bark, tops, cull logs, and broken or uprooted trees on the ground after logging.

slash-and-burn agriculture: See *shifting cultivation.*

slip: The downslope movement of a soil mass under wet or saturated conditions; a microlandslide that produces microrelief in soils.

slope: The degree of deviation of a surface from horizontal, measured in a numerical ratio, percent, or degrees. Expressed as a ratio or percentage, the first number is the vertical distance (rise), and the second is the horizontal distance (run), as 2:1 or 200 percent. Expressed in degrees, it is the angle of the slope from the horizontal plane with a 90° slope being vertical (maximum), and 45° being a 1:1 slope.

slot length limit: A protected length *range* of a fish population; fish that are either shorter or longer may be taken.

slough: A wet or marshy area.

sludge: 1. A semi-fluid mixture of fine solid particles with a liquid. 2. The concentration of solids removed from sewage during wastewater treatment.

sludgeworms. Aquatic segmented worms (obla) that exhibit marked population increases in waters polluted with decomposable organic wastes.

sluice: A channel serving to drain off surplus water from behind a floodgate; a conduit for carrying water at high velocity; an opening in a structure for passing debris. Also, to cause water to flow at high velocities for ejecting debris.

slurry: A watery mixture of insoluble matter.

smog: Originally, a combination of fog and smoke; now, also the photochemical haze produced by the action of sun and atmosphere on automobile and industrial exhausts.

smoke: The particles suspended in air after incomplete combustion of materials containing carbon.

snag: A standing section of the stem of a tree broken off at a height of not less than fifteen feet.

sod: A dense growth of grasses having a tight root system which protects the soil from water and wind erosion.

softwood: The wood of a coniferious tree.

soil: The unconsolidated mineral and organic material on the immediate surface of the earth that serves as a natural medium for the growth of plants.

soil association: A group of defined and named taxonomic soil units occurring together in an individual and characteristic pattern over a geographic region; comparable to plant associations in many ways.

soil auger: A tool for boring into the soil and withdrawing a small sample for field or laboratory observation.

soil classification: The systematic arrangement of soils into groups or categories on the basis of their characteristics. Broad groupings are made on the basis of general characteristics; subdivisions on the basis of more detailed differences in specific properties.

soil conditioner: Any material added to a soil for the purpose of improving its physical condition.

soil conservation: Using soil within the limits of its physical characteristics and protecting it from unalterable limitations of climate and topography.

soil-conserving crops: Crops that prevent or retard erosion and maintain or replenish, rather than deplete, soil organic matter.

soil creep: The slow mass movement of soil and soil material down relatively steep slopes, primarily under the influence of gravity, but facilitated by saturation with water and by alternate freezing and thawing.

soil-depleting crops: Crops that under usual management tend to deplete nutrients and organic matter from the soil and permit deterioration of soil structure.

soil drainage: As a natural condition of the soil, soil drainage refers to the frequency and duration of periods when the soil is free of saturation: in well-drained soils water is removed readily but not rapidly; in poorly drained soils the root zone is waterlogged for long periods unless artificially drained, and the roots of ordinary crop plants cannot get enough oxygen; in excessively drained soils the water is removed so completely that most crop plants suffer from lack of water.

soil erosion: The detachment and movement of soil from the land surface by wind or water. See *erosion.*

soil fertility: The quality of a soil that enables it to provide nutrients in adequate amounts and in proper balance for the growth of specified plants when other growth factors—such as light, moisture, temperature, and physical condition of soil—are favorable.

soil formation factors: The variables, usually interrelated natural agencies, active in and responsible for the formation of soil. The factors are usually grouped as: parent material, climate, organisms, topography, and time.

soil horizon: A layer of soil or soil material approximately parallel to the land surface and differing from adjacent genetically related layers in physical, chemical, and biological properties or characteristics such as color, structure, texture, consistence, kinds and numbers of organisms present, degree of acidity or alkalinity, etc. (Soil horizons and layers are designated by letter symbols as set forth in the U.S. Department of Agriculture's *Soil Survey Manual.* Master horizons and layers are designated by capital letters, O, A, E, B, C, R—from the soil surface downward to hard bedrock.)

soil improvement: The process for, or the results of, making the soil more productive by drainage, irrigation, addition of fertilizers and soil amendments, and other methods.

soil loss tolerance: The maximum average annual soil loss (expressed in tons per acre per year) that should be permitted on a given soil.

soil management: The sum total of all tillage operations, cropping practices, fertilizing, liming, and other treatments conducted on, or applied to, a soil for the production of plants.

soil materials: 1. Soil or portions of soil that have been displaced or mixed by either natural or mechanical means. 2. Unconsolidated and more or less chemically weathered mineral matter from which soils are developed by pedogenic processes. 3. Disintegrated and partly weathered rock from which soil parent materials are formed.

soil moisture: The water content stored in a soil. (Measured by volume (Mv), it is the volume of water per unit of soil, usually expressed as a percentage; measured by weight (Mw), it is the weight of water per unit oven-dryweight of the soil.)

soil monolith: A vertical section of a soil profile removed and mounted for display or study.

soil organic matter: The fraction of the soil that includes plant and animal residues at various stages of decomposition, cells and tissues of soil organisms, and substances synthesized by the soil population.

soil permeability: The quality of a soil horizon that enables water or air to move through it. (The permeability of a soil may be limited by the presence of one nearly impermeable horizon even though the others are permeable.)

soil pollution: The addition of harmful or objectionable material to soil in concentrations, or in sufficient quantities, so as to adversely affect its usefulness or quality.

soil probe: A tool having a hollow cylinder with a cutting edge at the lower end, used for probing into the soil and withdrawing a small sample for field or laboratory observation.

soil productivity: The capacity of a soil in its normal environment for producing a specified plant or sequence of plants under a specified system of management.

soil profile: A vertical section of a soil from the surface through all its horizons. See *soil horizon*.

soil separates: Mineral particles, less than 2.0 millimeters in equivalent diameter, ranging between specified size limits. The names and size limits of separates recognized by the National Cooperative Soil Survey in the United States are:

very coarse sand	—2.0 to 1.0 millimeters
coarse sand	—1.0 to 0.5 millimeters
medium sand	—0.5 to 0.25 millimeters
fine sand	—0.25 to 0.10 millimeters
very fine sand	—0.10 to 0.05 millimeters
silt	—0.05 to 0.002 millimeters
clay	—less than 0.002 millimeters

soil structure: The combination or arrangement of primary soil particles into secondary particles, units, or peds.

soil survey: A general term for the systematic examination of soils in the field and in laboratories: their description and classification; the mapping of kinds of soil; the interpretation of soils according to their adaptability for various crops, grasses, and trees; their behavior under use or treatment for plant production or for other purposes; and their productivity under different management systems.

soil texture: The relative proportions of the various soil separates in a soil as described by the classes of soil texture. The limits of the various textural classes are: sand, loamy sand, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, clay.

solar cell: See *photovoltaic cell.*

solar energy: The energy from the sun.

solid waste: Useless, unwanted, or discarded materials having insufficient liquid to be free-flowing.

solid waste disposal: The final placement of refuse that cannot be, or is not, salvaged or recycled.

solid waste management: The purposeful, systematic control of the generation, storage, collection, transportation, separation, processing, recycling, recovery and disposal of solid wastes.

solum (pl. sola): The upper part of a soil profile—above the parent material—in which the processes of soil formation are active. (The living roots and other plant and animal life characteristic of the soil are largely confined to the solum.)

somatic damage: The damage caused by radiation or chemicals to tissues, other than germ (reproductive) cells, that can cause various forms of cancer, miscarriages, cataracts, shortening of life span, and damage to unborn children. See also *genetic damage.*

sonic boom: The thunderous noise made when shock waves reach the ground from a jet airplane exceeding the speed of sound. The shock wave is continuously produced, but sounds explosive at any single point on the ground.

soot: The carbon dust formed by incomplete combustion.

sorption: The action of soaking up or attracting substances; it is used in many pollution control processes.

spawn: 1. In aquatic animals, to produce or deposit eggs or sperm. 2. To produce eggs or young. 3. Eggs of fishes and higher aquatic invertebrates.

species (both singular and plural): A natural population or group of populations that transmit specific characteristics from parent to offspring. They are reproductively isolated from other populations with which they might breed.

species diversity: The ratio of the number of species in a community to the number of individuals in each species. (Low diversity occurs when there are few species, but many individuals in each species.)

specific gravity: The relative weight of a given volume of any kind of matter (volume occupied by solid phase, pore space excluded) compared with an equal volume of distilled water at a specified temperature.

spillway: An open or closed channel, or both, used to convey excess water from a reservoir. It may contain gates, either manually or automatically controlled, to regulate the discharge of excess water.

spoil: 1. Soil or rock material excavated from a canal, ditch, basin, or similar construction. 2. The overburden material removed in gaining access to the mineral material in surface mining.

spoil bank: A pile of soil, subsoil, rock, or other material excavated from a drainage ditch, pond, or other cut.

spontaneous process: Any process that can occur naturally without an outside input of energy; for example, water flowing downhill or heat energy flowing from hot to cold.

spot planting (forestry): The planting in small open areas among established groups or stand of trees. See *interplanting.*

spreader strip: A relatively permanent contour strip of variable width planted to sod or an erosion resistant crop to slow down and fan out the runoff from land above the strip.

spring overturn: See *overturn.*

spring shuffle: The break up of winter coveys of quail and the subsequent pairing for nesting, mating, and production of young.

stability: 1. An atmospheric condition with little or no vertical air movement. 2. The ability to maintain a particular steady state in spite of environmental change. (It can mean stability of landscape, constancy of numbers of different species, or little fluctuation in the number of individuals in a particular species.)

stabilization: To convert the active organic matter in sludge into inert, harmless material.

stabilized grade: The slope of a channel at which neither erosion nor deposition occurs.

stable air: A mass of air that is not moving normally, so that it holds rather than disperses pollutants.

stable population: A population whose rate of growth or decline is constant; the birth rate, death rate, and age-sex structure are also constant.

stack: An upright pipe that exhausts waste emissions into the atmosphere.

stack effect: Used air, as in a chimney, that moves upward because it is warmer than the surrounding atmosphere.

stagnation: The lack of motion in a mass of air or water.

stand: An aggregation of trees or other growth occupying a specific area and sufficiently uniform in composition (species), age arrangement, and condition to be distinguishable from the forest or other growth on adjoining areas.

standing crop: 1. The total biomass of an area at a given time. 2. The quantity of a given species at a given time.

stationary population: A stable population that does not increase or decrease in size.

stationary source: A pollution location that is fixed rather than moving.

steady flow: A condition in which the rate of movement remains constant with time through a given cross section.

stem: The principle axis of a plant from which buds and shoots develop; with woody species the term ''stem'' applies to all ages and thicknesses.

sterile male technique: A form of insect control in which vast numbers of sterilized males are released to mate unsuccessfully with normal females and thus reduce the population.

sterilization: The destruction, by chemical or physical means, of an organism's ability to reproduce; to render something barren.

stilling basin: An open structure or excavation at the foot of an overfall, chute, drop, or spillway to reduce the energy of the descending stream.

stocking: 1. The degree to which an area is effectively covered with living trees. 2. The release of wildlife species that have been captured, or propagated in captivity, into a suitable habitat.

stocking rate: 1. (range management) The number of specified kind and class of animals grazing a unit of land for a specified period of time; the rate may be expressed as animals per land area, or the reciprocal—area of land per animal. 2. (fisheries) The calculated number of one or more species to be placed into a body of water; the rate can be varied to provide for maximum commercial production or for maximum sport fishing success.

stockpond: An impoundment which primarily serves to supply water for livestock; the term may be used for reservoirs, pits, and tanks.

stony land: Areas containing sufficient stones to make the use of machinery impractical; usually 15 to 90 percent of the surface is covered with stones.

storage (wastes): The interim containment of solid waste after generation and prior to ultimate disposal.

storm: In general, a disturbance of the atmosphere. The term may be qualified to emphasize a particular part of the meteorological disturbance, such as windstorm, sandstorm, rainstorm, or thunderstorm.

storm sewer: A system that collects and carries rain and snow runoff to a point where it can either soak into the groundwater or flow into surface waters.

stormwater runoff: The water and associated material draining into streams, lakes, or sewers as a result of a storm.

stratification: The process of arrangement or composition in strata or layers.

stratify: 1. To store seeds between layers of moist media, or to bury them to keep them fresh and moist, but not to warm them so as to cause germination. 2. A treatment used to break the dormancy of seeds requiring cold. 3. To become layered, as when a warm layer of water overlies a color layer of water.

streambanks: The usual boundaries, not the flood boundaries, of a stream channel. Right and left banks are named facing downstream.

stream load: The quantity of solid and dissolved material carried by a stream.

stream reach: The continuous portion of a stream channel and adjoining floodplain from one selected point to another, usually measured along the thalweg of the channel.

stripcropping: The growing of crops in a systematic arrangement of strips or bands which serve as barriers to wind and water erosion.

strip mining: A process in which rock and topsoil strata overlying ore or fuel deposits are scraped away by mechanical shovels. Also known as *surface mining.*

strip pit: An unfilled trench formed by the removal of overburden and seam of coal (or other mineral ore) during strip mining.

strip tillage: Tillage operations for seedbed preparation that are limited to a strip not to exceed one-third of the distance between rows; the area between is left untilled with a protective cover of crop residue on the surface for erosion control. Planting and tillage are accomplished in the same operation.

structural measures (water resources): Dams, levees, diversions, channels, or other constructed devices used to modify floods in a way that reduces flood damage.

stub: A standing section of the stem of a dead tree broken off at a height of less than fifteen feet.

stubble: The basal portion of plants remaining after the top portion has been harvested by cutting (crops) or grazing (grasses and forbs).

stubble crops: 1. Crops that develop from the stubble of the previous season (such crops may also be called "volunteer"). 2. Crops sowed on grain stubble after harvest for turning under the following spring.

stubble mulch: The crop stubble or residues left essentially in place on the land as a surface cover during fallow and the growing of a succeeding crop.

stumpage: The value of uncut timber; the standing timber.

subhumid: Regions or climates where moisture is normally less than under humid conditions, but still sufficient for the production of many agricultural crops without irrigation or dryland farming. Natural vegetation is mostly tall grasses. Annual rainfall varies from 20 inches in cool regions to as much as 60 inches in hot areas. See *humid.*

sublimation: The process by which a solid is changed into a gas, or a gas into a solid, without passing through the liquid stage.

submarginal land: Land that does not provide economic return sufficient to pay costs of operation in a specific use. See *marginal land.*

submerged discharge: The discharge from an outlet or measuring device below or partially below a free-water surface.

subsidence: 1. A downward movement of the ground surface caused by solution and collapse of underlying soluble deposits, collapse of underground workings, or reduction of fluid pressure within an aquifier or petroleum reservoir. 2. The movement of an aerial compound to a lower level; e.g., transport of ozone from the stratosphere to the atmosphere by wind.

subsoil: The B horizons of soils with distinct profiles. In soils with weak profile development, the subsoil can be defined as the soil below the plowed soil (or its equivalent of surface soil), in which roots normally grow. (A common term that cannot really be defined accurately, it has been carried over from early days when "soil" was conceived only as the plowed soil, and materials under it as the "subsoil.")

subsoiling: The tillage of subsurface soil without inversion to break dense layers that restrict water movement and root penetration.

subsurface tillage: Tillage with a special sweeplike plow or blade that is drawn beneath the surface, normally at a depth of several inches, cutting plant roots and loosening the soil without inverting it, or without incorporating residues or the surface cover.

succession: The progressive development of vegetation toward its highest ecological expression, the climax; the replacement of one plant community by another.

summer fallow: The tillage of uncropped land during the summer in order to control weeds and to store moisture in the soil for the growth of a later crop.

summer kill: A complete or partial kill of a fish population in ponds or lakes during the warm months; variously produced by excessively warm water, by a depletion of dissolved oxygen, by the release of toxic substances from a decaying algal bloom, or by a combination of these factors. See *winter kill.*

sump: A pit, tank, or reservoir in which water is collected, stored, or withdrawn.

supersaturation: A condition in which a solution has more solute dissolved than is normally possible under the existing conditions.

supersonic: 1. Designating vibrations or waves with frequencies higher than those audible to the human ear (exceeding 20,000 per second). 2. Designating a speed greater than the speed of sound (1,087 feet per second or 738 miles per hour).

supersonic transport (SST): A passenger-carrying jet airplane that can fly faster than the speed of sound; it may be extremely noisy upon takeoff and landing.

supplemental irrigation: The application of water to insure crop production in areas where rainfall normally supplies most of the needed moisture; water is usually applied only during dry spells at times critical for crop production.

suppression: The process by which certain trees, shrubs, etc., become weakened by the competition from their neighbors (natural suppression), or by man's intervention (artificial suppression).

surface cracking (wastes): Discontinuities that develop in the cover material at a sanitary landfill due to the surface drying or the settlement of the buried waste; it may result in the exposure of solid waste, entrance or egress of vectors, intrusion of water, and venting of decomposition gases.

surface drains: A channel to remove surface water from the land.

surface dump: A land site where solid waste is deposited in an open area with no further disposal processes.

surface fire: A fire that burns only surface litter, other loose debris of the forest floor, and small vegetation.

surface irrigation: Irrigation where the soil surface is used as a conduit, as in furrow and border irrigation, as opposed to sprinkler irrigation or subirrigation.

surface mining: See *strip mining.*

surface soil layer: The uppermost part of the soil that is ordinarily moved in tillage (or its equivalent in uncultivated soils); it varies in depth from about 5 to 8 inches. It is frequently designated as the *plow layer,* the *Ap layer,* or the *Ap horizon.*

surface water: All water whose surface is exposed to the atmosphere.

surfactant: A surface active chemical agent, usually made up of phosphates, used in detergents to cause lathering.

surveillance system: A series of monitoring devices designed to determine environmental quality.

suspended solid: Any solid substance present in water in an undissolved state, usually contributing directly to turbidity.

sustained yield: A condition in which the rate of utilization or consumption of a resource does not exceed the rate of recovery or production.

swamp: An area saturated with water throughout much of the year, but with the surface of the soil usually not deeply submerged; it is usually characterized by tree or shrub vegetation.

swidden agriculture: See *shifting cultivation.*

swill: A semiliquid waste material consisting of food scraps and free liquids.

symbiosis: The state of two organisms of different species living in close association, one or both benefiting, and neither harmed.

synergism: The simultaneous actions of two or more agencies that together have a greater total effect than the sum of their individual effects.

synthesis: The production of a substance by the union of elements or simpler chemical compounds.

systemic pesticide: A chemical that is taken up from the ground or absorbed through the surface and carried through the systems of the organism being protected, thus making it toxic to pests.

T

tailings: The second grade or waste material derived when raw material is screened or processed in mining.

tailwater: 1. (hydraulics) The water in a river or channel immediately downstream from a structure. 2. (irrigation) The water that reaches the lower end of a field.

tailwater recovery: The process of collecting irrigation water runoff for reuse in the system.

talus: Fragments of rock accumulated by gravity at the foot of cliffs or steep slopes.

taproot system: A plant root system dominated by a single large primary root (taproot), normally growing straight down, from which most or all of the smaller roots spread out laterally. See *fibrous root system.*

tar sands: Sedimentary rocks that contain viscous, heavy petroleum that cannot be recovered by conventional methods of petroleum production.

taxonomy: The science of classification; laws and principles governing the classifying of objects.

temperature inversion: An atmospheric condition in which air temperature increases with altitude; it is characterized by static stability.

temporary pasture: A pasture, usually consisting of annual plants, intended to provide grazing for only a short period.

teratogen: A substance which causes malformation of a developing fetus.

teratogenic: Any substances that are suspected of causing malformations or serious deviations in or on animal embryos or fetuses.

terrace: 1. An embankment, or combination of an embankment and channel, constructed across a slope to control erosion by diverting or storing surface runoff instead of permitting it to flow uninterrupted down the slope. 2. A level, usually narrow, plain bordering a river, lake, or sea. (Rivers sometimes are bordered by several terraces at different elevations.)

terrace interval: The distance, measured either vertically or horizontally, between corresponding points on two adjacent terraces.

terrace outlet channel: The channel, usually having a vegetative cover, into which the flow from one or more terraces is discharged and conveyed from the field.

terrace system: A series of terraces occupying a slope and discharging runoff into one or more outlet channels.

territory (wildlife): The defended part of an animal's range.

tertiary treatment: The advanced cleaning of wastewater that goes beyond the secondary or biological stage. It removes most suspended solids and nutrients such as phosphorus and nitrogen.

thalweg: 1. The line following the deepest part of the channel in a flowing stream. 2. The line following the lowest part of a valley (whether under water or not).

thermal effluent: A discharge of water at a temperature significantly higher than that of the receiving body of water.

thermal pollution: The raising of the normal temperatures of bodies of water by discharging warmer water into them and adversely (implied) affecting the organisms in the receiving water.

thermal stratification: The condition of a body of water in which the successive horizontal layers have different temperatures, each layer more or less sharply differentiated from the adjacent ones. See *overturn.*

thermal turbulence: The mixing of air by convection.

thermocline: The transitional zone between the warm epilimnion and cold hypolimnion of stratified bodies of water; temperature change equals or exceeds 1° C for each meter of depth. See *thermal stratification.*

thermodynamic efficiency: The measure of the ability of an engine or process to convert energy to useful work; the ratio of useful energy to total energy input.

thinning (forestry): A cutting made in immature tree stands to provide adequate growing space, accelerate diameter growth, and improve the average form of the remaining trees.

threatened species: Any species that is likely to become endangered within the forseeable future throughout all or a significant portion of its range.

threshold dose: The minimum application of a given substance required to produce a measurable effect.

threshold effect: A phenomenon in which no effect is observed until a certain level or concentration is attained.

threshold velocity: The minimum velocity at which wind will begin moving particles of sand or other soil material.

tidal marsh: A low, flat marshland traversed by interlaced channels and tidal sloughs that is subject to tidal inundation; the only vegetation normally present is salt-tolerant bushes and grasses.

till: (n.) The unstratified glacial drift (consisting of clay, sand, gravel, and boulders intermingled in any proportion) deposited directly by the ice. (v.) The mechanical manipulation of soil to control weeds or prepare a seedbed.

tillage: The operation of implements through the soil to prepare seedbeds and root beds, control unwanted vegetation, aerate the soil, and cause faster breakdown of organic matter.

tilth: The physical condition of soil as related to its ease of tillage, fitness as a seedbed, and impedance to seedling emergence and root penetration.

timberline: The elevation or latitude above which there are no trees.

timber stand improvement (TSI): A loose term comprising all intermediate cuttings made to improve the composition, condition, and growth of a timber stand; it may also include practices such as girdling and poisoning.

tolerance range: The range of one or more environmental conditions within which an organism can function.

topographic map: A representation of the physical features of a portion of the earth's surface as a plane surface, on which terrain relief is shown by a system of lines, each representing a constant elevation above a datum or reference plane.

topography: The physical features of a surface area, including relative elevations, and the position of natural and manmade features.

topsoil: 1. The original or present dark-colored upper soil that ranges in depth from a mere fraction of an inch to two or three feet on different kinds of soil. 2. The original or present A horizon, varying widely among different kinds of soil. 3. The surface plow layer of a soil; also called surface soil. 4. Earthy material used as a top-dressing for house lots, grounds for large buildings, gardens, road cuts, or similar areas. (Topsoil has favorable characteristics for production of desired kinds of vegetation, or can be made favorable. The term has no precise meaning when applied to soils in the field, unless it is defined as to depth or productivity in relation to a specific kind of soil.)

toxicant: 1. A substance that through its chemical or physical action kills, injures, or impairs an organism. 2. Any environmental factor which, when altered, produces a harmful biological effect.

toxicity: The quality, state, or degree of the harmful effect resulting from alteration of an environmental factor.

toxic substances: A chemical or mixture that may present an unreasonable risk of injury to health or the environment.

transect: A cross section of an area used as a sample for recording, mapping, or studying vegetation and its use. A transect may be a series of plots, a belt, strip, or line, depending on why it is being used.

transient species: A species that migrates through a locality without breeding or over-wintering.

transpiration: The photosynthetic and physiological process by which plants release water into the air in the form of water vapor.

transportation (soils): The movement by running water, wind, or gravity of detached soil material across the land surface or through the air.

treatment tank: A water-tight tank designed to retain sewage long enough for satisfactory bacterial decomposition of the solids.

tree: A woody perennial plant that reaches a mature height of at least eight feet, has a well-defined stem, and a definite crown shape.

There is no clear-cut distinction between trees and shrubs. Some plants, such as willows, may grow as either trees or shrubs.

tributary: A secondary or branch of a stream, drain, or other channel that contributes flow to the primary or main channel.

trickle tube: A small diameter pipe to take water by gravity from a farm pond to a drinking receptacle without allowing livestock access to the pond.

trickling filter: A biological treatment device by which wastewater is trickled over a bed of stones covered with bacterial growth; the bacteria break down the organic wastes in the sewage and produce cleaner water.

trophic: That which relates to the processes of energy and nutrient transfer from one or more organisms to another in an ecosystem.

trophic level: The level in a nutritive series of an ecosystem in which a group of organisms in a certain stage in the food chain secures food in the same general manner. The first or lowest trophic level consists of producers (green plants); the second level of herbivores; the third level of secondary carnivores; and the last level of reducers.

trophogenic region: The area of a body of water where organic production from mineral substances takes place on the basis of light energy and photosynthetic activity.

troposphere: The lower part of the earth's atmosphere in which most weather phenomena occur; it extends from the earth's surface to a height of about ten miles above the equator, about five miles above the poles.

truncated soil profile: A soil profile that has been cut down by accelerated erosion or by mechanical means. The profile may have lost part or all of the A horizon and sometimes the B horizon, leaving only the C horizon. Comparison of an eroded soil profile with a virgin profile of the same area, soil type and slope conditions indicates the degree of truncation.

tundra: The treeless land in arctic and alpine regions; it may be barren, or contain various types of vegetation, such as grasses, sedges, forbs, dwarf shrubs, mosses, and lichens.

turbidimeter: A device that measures the amount of suspended solids in a liquid.

turbidity: 1. The cloudy condition caused by suspended solids in a liquid. 2. A measurement of the suspended solids in a liquid. 3. Conditions in the atmosphere that reduce its transparency to radiation.

turbulent flow (hydraulics): A type of flow in which any particle may move in any direction with respect to any other particle and not in a fixed or regular path. The water is agitated by cross currents and eddies.

U

ubiquitous organisms: 1. Organisms that can tolerate a wide range of environmental conditions or variation. 2.Organisms that are so active or numerous as to seem to be present or existent in all types of environments.

unavailable forage: Forage that is not available to grazing animals.

unbalanced population (fisheries): The numerical ratio between prey and predators that is not conducive to the production of quality fish or the quality of fishing success; for example, a population consisting of many stunted bluegills and only a few large bass.

undercutting: Removal of material at the base of a steep slope, overfall, or cliff by falling water, a stream, wind erosion, or wave action; it steepens the slope or produces an overhanging cliff.

uneven-aged stand: A forest stand composed of intermingled trees that differ markedly in age.

undergrazing: An intensity of grazing in which the available forage is not fully utilized. See *overgrazing.*

undergrowth (forestry): The seedlings, shoots, and small saplings under an existing stand of trees.

undernutrition: A state of poor health in which the individual is not obtaining enough total energy or calories. Compare *malnutrition.*

understory: The trees in a forest that are below the upper crown cover; also called *underwood.* See *overstory.*

undesirable species: Species of organisms that conflict with, or do not contribute to, the resource management objectives.

upwelling: A phenomenon of the deep ocean adjoining a continent in which nutrient-rich bottom waters are brought to the surface by action of off-shore winds.

urban area: 1. An area predominantly occupied by manmade structures used for residential, commercial, and industrial purposes. 2. By definition of the U.S. Bureau of Census, communities having more than 2,500 persons.

urban runoff: The storm water from city streets and gutters that usually contains a great deal of litter and organic and bacterial wastes.

V

vagility: The inherent power of movement of individual organisms or their disseminules.

vapor: The gaseous phase of substances that are either liquid or solid at atmospheric temperature and pressure.

vaporization: The process by which a substance is converted from a liquid to a gaseous state. (One of three basic contributing processes to air pollution; see *attrition, combustion.*

vapor plumes: Flue gases that are visible because they contain water droplets.

variance: 1. (pollution) Permission granted by regulatory agencies to pollute for a limited period of time, usually while corrective measures are being taken. 2. (zoning) Permission granted by zoning boards for departure from standards of the zoning ordinance.

varmint: A dialectal term for wild animals, especially predators that are considered pests.

vector: An organism, often an insect, that carries disease.

vegetation: The sum total of plants that cover an area; plants in general.

vegetation type: A plant community with distinguishable characteristics.

veneer: A thin sheet of wood of uniform thickness that is usually produced by rotary cutting or slicing.

veneer log: A log considered suitable in size and quality for producing veneer.

vermin: 1. Animals (usually collectively) that are noxious or disgusting, of small size, common occurrence, and difficult to control. 2. Any animals that are predators upon game animals.

vertebrates: Animals that have an internal skeletal system. See *invertebrate.*

virgin forest: A mature or overmature forest essentially uninfluenced by human activity.

virgin material: Any basic material for industrial processes that has not previously been used. See *secondary material, primary material.*

volatile: Any substance that evaporates readily at a normal temperature and pressure.

volume reduction: To process waste materials so as to decrease the amount of space that the materials occupy. Processes include: 1) mechanical, which uses compaction; 2) thermal; 3) biological, in which the organic waste fraction is degraded by biological action; and 4) chemical.

W

warm-season plant: A plant that completes most of its growth during the warm portion of the year, generally late spring and summer.

warmwater fish population: Fish that normally survive, grow, and reproduce in warm water, 25° to 32°C (59°-90°F).

warmwater stream: A stream that supports a warmwater fishery, usually including largemouth bass and sunfish. Spawning temperatures are usually in excess of 21°C.

waste: The refuse from places of human or animal habitation, or the unwanted materials left over from manufacturing processes.

waste processing: Any operations—such as shredding, compacting, composting, and incinerating—by which the physical or chemical properties of wastes are changed.

waste treatment: Any of the physical or chemical processes whereby the qualities of given waste are made more compatible or acceptable to man.

wastewater: The water that carries wastes from homes, businesses, and industries; a mixture of water and dissolved or suspended solids.

wastewater stabilization pond: An impoundment into which untreated or partially treated wastewater is discharged and in which natural purification and stabilization processes take place under the influence of sunlight, air, and biological activity. See *lagoon*.

water demand: The water requirements for a particular purpose, such as irrigation, power, municipal supply, plant transpiration, or storage.

waterfowl: Collectively, all species of ducks, geese, and swans.

waterlogged: To be saturated with water; a soil condition where a high or perched water table resulting from over-irrigation, seepage, or inadequate drainage is detrimental to plant growth; the replacement of most of the soil air by water.

water management: The application of practices to obtain greater benefits from precipitation, water, or water flow for any of a number of purposes (such as irrigation, drainage, wildlife, recreation, water supply, watershed management, and water storage in soil for crop production).

water penetration: The depth to which irrigation water or precipitation penetrates soil before the rate of downward movement becomes negligible.

water pollution: The addition of harmful or objectionable material to water in concentrations or sufficient quantities to adversely affect its usefulness or quality.

water quality: The chemical, physical, and biological condition of water related to beneficial use.

water quality standards: The minimum requirements of purity of water for various uses.

water resources: The supply of groundwater and surface water in a given area.

water rights: The legal rights to the use of water. They consist of riparian rights, those acquired by appropriation, and those acquired by prescription. Riparian rights are those rights to use and control water by virtue of ownership of the bank or banks; appropriated rights are those acquired by an individual for the exclusive use of water, based strictly on prior appropriation and application of the water to beneficial use without limitation of the place of use; prescribed rights are those to which legal title is acquired by long possession and use without protest of other parties.

water rights, correlative doctrine: When a source of water does not provide enough for all users, the water is apportioned proportionately on the basis of prior water rights held by each user.

watershed: The land area that drains toward a natural surface water system. (More precisely, a given *point* on such a system.)

watershed management: The use, regulation, and treatment of water and land resources of a watershed to accomplish stated objectives.

waterspreading: Diverting streamflow (generally storm flow) or runoff from channels or gullies by a system of dams, dikes, or ditches and spreading it over relatively flat areas to conserve wastewater, maintain or increase plant growth, reduce flood peaks, or replenish and increase the groundwater supply.

water supply system: The collection, treatment, storage, and distribution of potable water from source to consumer.

water table: 1. The upper surface of groundwater, or that level below which the soil is saturated with water. 2.The locus of points in soil water at which the hydraulic pressure is equal to atmospheric pressure.

waterway: A natural course or constructed channel for the flow of water. See *grassed waterway.*

weather: The state of the atmosphere at any given time with regard to precipitation, temperature, humidity, cloudiness, wind movement, and barometric pressure. See *climate.*

weathering: The disintegration and decomposition of rocks and other earth materials through exposure to varying conditions of the atmosphere; one of the major factors in formation of soil.

weed: An undesired, uncultivated plant.

weed tree: An undesirable species of tree that interferes with the development of crop trees.

weir: A device for measuring or regulating the flow of water.

wet digestion: A solid waste stabilization process in which mixed solid organic wastes are placed in an open digestion pond to decompose anaerobically.

wetland: Any area that is more or less regularly wet or flooded, and where the water table stands at or above the land surface for at least part of the year.

wet milling: The mechanical reduction in size of solid wastes that have been wetted to soften the paper and cardboard constituents.

wet scrubber: An air cleaning device that literally washes out the dust. Exhaust air is forced into a spray chamber, where fine water particles cause the dust to drop from the air stream. The dust-laden water is then treated to remove the solid material. The cleansed water is often recirculated.

wetting agent: A chemical that reduces the surface tension of water and enables it to soak more readily into porous material.

white goods (waste): Discarded kitchen and other large enameled appliances.

wilderness: A rather large, generally inaccessible, area left in its natural state. It is void of development except for those trails, sites, and signs left by previous wilderness users.

wildfire: Any fire on land, especially wild land, other than a controlled or prescribed burn.

wilding: A seedling or young plant naturally produced outside a nursery and dug for use as planting stock.

wild land: Uncultivated land other than fallow, especially land virtually uninfluenced by human activity.

wildlife: Undomesticated animals, considered collectively.

wildlife land: Land managed or used primarily for wildlife.

wildlife management: The art of producing sustained annual crops of wildlife.

wildlife refuge: An area designated for the protection of wild animals, within which hunting and fishing is either (usually) prohibited or strictly controlled.

windbreak: 1. A living barrier of trees, or combination of trees and shrubs, located adjacent to farm or ranch headquarters, and designed to protect the area from cold or hot winds, and from drifting snow. 2. A narrow barrier of from one to five rows of living trees, or a combination of trees and shrubs, (usually) established within or around a field for the protection of land and crops from wind; it may also consist of narrow strips of annual crops, such as corn or sorghum.

wind erosion: The detachment and transportation of soil by wind.

wind stripcropping: The production of crops in relatively narrow strips established at a right angle to the direction of prevailing winds.

windfall: A tree or trees that have been blown down or broken by wind; also, the area on which many of the trees have been blown down or broken by wind.

winter irrigation: The irrigation of lands between growing seasons for the purpose of storing water in the soil for subsequent use by plants.

winter kill: The death of fish in a body of water during a prolonged period of ice and snow cover; the deaths are caused by oxygen exhaustion due to respiration and lack of photosynthesis. See *summer kill.*

wolf tree: A tree of little or no economic value for wood fiber production. It is usually broad-crowned, short-stemmed, large and limby due to more than adequate growing space. It may have value for wildlife purposes.

woodland: Any land used primarily for growing trees and shrubs.

wood pulp: The basic primary material from which most papers are made. It consists of small, loose wood fibers mixed with water.

working face: The portion of a sanitary landfill where waste is discharged by collection trucks; it is compacted prior to covering.

X

xerophyte: A plant capable of surviving periods of prolonged moisture deficiency. See *hydrophyte, mesophyte.*

Y

yarding: In regions of heavy snow and cold weather the tendency for deer to congregate during the winter season into small, densely populated areas (called "deer yards").

year-class: All organisms in a population that were produced the same year.

yearling: An animal that is more than one year, but less than two years, in age.

yield: The amount of harvest, expressed in numbers, volume, or weight of either plants or animals.

young-of-year: An animal that is less than one year in age.

Z

zero population growth (ZPG): A condition of a population when births plus immigration is equal to deaths plus emigration.

zone: An area characterized by similar flora or fauna; a belt or area to which certain species are limited.

zone of aeration: The subsurface zone above the water table in which the soil or permeable rock is not saturated.

zoning: The partition by ordinance of a city, county, township, or other governmental unit or area into sections reserved for different purposes (such as residential, business, manufacturing, or agriculture).

zooplankton: Unattached microscopic animals of plankton having minimal capability for locomotion. See *plankton, phytoplankton.*

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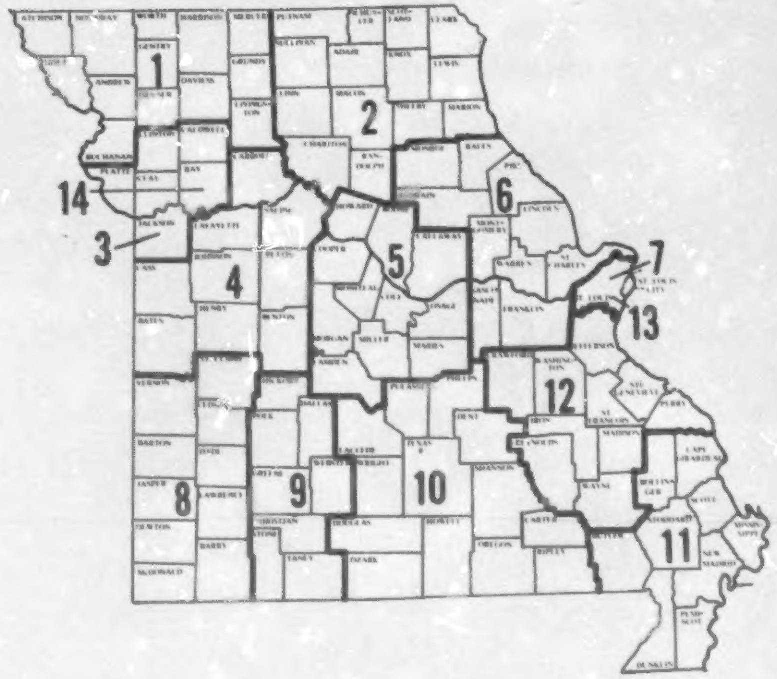
Conservation Education Consultants will assist you in obtaining materials and scheduling equipment and films that are available from the Department of Conservation. They also offer workshops to provide training in conservation education.



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Specialists' Regions

Outdoor Skills Education Specialists and Education Consultants will assist you in obtaining materials and scheduling equipment and films that are available from the Department of Conservation. They also offer workshops to provide training in outdoor skills and conservation education.

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Lake City Training Center and Range
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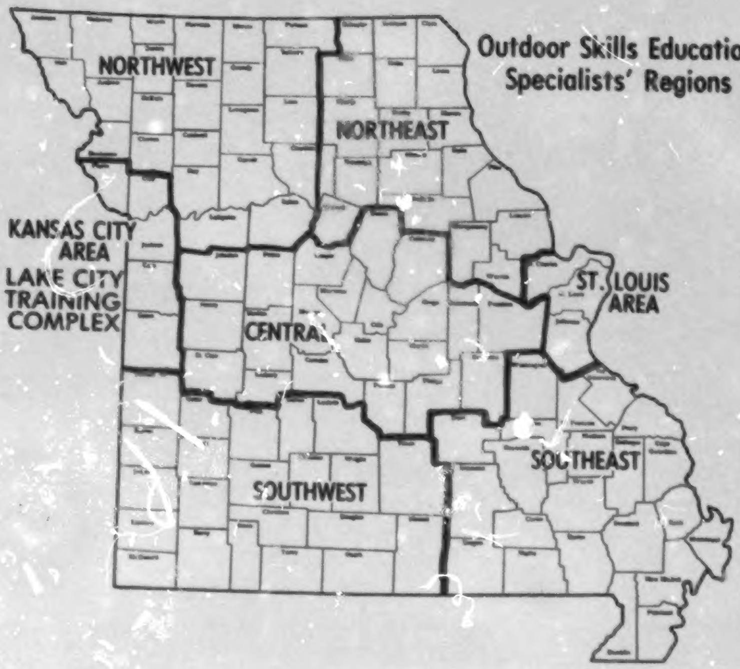

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Washington, D.C. 20240

or

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